Philips CMS Patient Monitoring System

Configuration Manual

Anesthesia/Neonatal/Standard

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Printing History

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What is in this Manual?

This guide is intended for Biomedical Engineers or Philips Service and Clinical Specialist personnel who are about to perform the off-line configuration procedures for the CMS.

What is in this Manual? This manual contains information for configuring the CMS at software Release C.0.

1. Introduction This introduces the concepts of what configuration actually is, why it is necessary and how best to use it.

2. Procedures This describes the configuration procedure in more detail, explaining the method by which values are altered.

3. Configuration Tables This is a detailed list of all the parts of the system that can be configured. There are tables showing the pre-configured factory values and all the possible values for every part of the system. A fourth blank column has been provided for you to record your configuration changes.

4. Drug Calculator Configuration This chapter lists the standard drugs of the CMS's Drug Calculator feature. Instructions are given for defining a set of drugs specific to your unit. A worksheet is included (Appendix B) on which you can keep a record of the drugs that you configure.

A. Selecting the Correct Patient Category This appendix fully details the effects of changing patient category on the parameters (in particular NBP and ECG) to allow the selection of the correct category.

B. Sign-off Sheets This appendix contains a configuration sign-off sheet for recording who was responsible for making any configuration changes, and a drug calculator worksheet to document the hospital unit's specific drug configuration.

C. Printing the Configuration This appendix describes how to print screens from the configuration.

Notation Used in This Manual

The following symbols are used in this manual:

Hardkey Represents the keys on the monitor's Control Panel or Handheld Keypad.

Softkey Represents the keys in the Task Window.

Related Documents

Service Guide This manual is a combined reference guide and self-paced course featuring 7 chapters on how to test, troubleshoot and repair the instrument. The manual is intended for hospital Biomedical Engineers and Technicians, Philips Customer Engineers, Response Center Engineers and Installation Planning Specialists.

Concepts Guide This manual provides a conceptual foundation for the monitoring systems in order to support effective troubleshooting and repair. The manual is intended for all hospital Biomedical Engineers and Technicians responsible for troubleshooting, repairing and maintaining Philips patient monitoring systems.

Site Preparation and Installation manual This manual contains the information required for site planning and installation of the System.

User's Guide This guide provides operating procedures for the tasks most often performed on the System.

User's Reference Manual This manual comes in 2 volumes:

Volume 1: Provides detailed reference information on the operation of the System.

Volume 2: Provides detailed reference information on the operation of Plug-in Modules used with the System.

Quick Reference Service Guide This guide provides a brief summary of the important service information on the System.

M1234B 21" Slave Display Installation & Service Manual This manual provides information on the 21" Slave Display for the System.

M1117A Multi-channel Thermal Array Recorder Service Manual	This manual provides service and support information for the Philips M1117A Multi-channel Thermal Array Recorder.
M1032A VueLink Handbook	This manual provides detailed installation, configuration and service information specific to the M1032A VueLink (device interface) Module.
RS232 Computer Interface Programming Guide	This guide provides information on the capabilities of the System's RS232 Computer Interface, to allow the users (Software Professionals at medical research clinics or industrial institutions and Biomedical Engineers) to create applications on PC-based systems.
Schematics Book Volume 1 - M1092A/94A Displays and DC/DC Converter	Volume 1 of the Schematics Book provides schematic diagrams and parts lists to aid the component level servicing of the M1092A 14” Monochrome Display, the M1094A 14” Color Display, and the DC/DC Converter of the System.
Schematics Book Volume 2 - Computer Module and HIF Devices	Volume 2 of the Schematics Book provides schematic information and parts lists for the function cards in the Computer Module, and Human Interface Devices of the System.
Schematics Book Volume 3 - Plug-In Modules	Volume 3 of the Schematics Book provides schematic information and parts lists for the Plug-in Modules of the System.
Schematics Book Volume 4 - M1094B Display	Volume 4 of the Schematics Book provides schematic diagrams and parts lists to aid the component level servicing of the M1094B 14” Color Display.

M2003A Patient Data Server Service and Installation Guide

This guide provides detailed Installation and Service Information for the Blood Analysis Interface which is used to transmit Blood Analysis information from the CMS to a Central Data Station.

M3640A Central Data Station Service and Installation Guide

This guide provides detailed Installation and Service Information for the Central Data Station which can be used to collect and store Blood Analysis information.

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1
Introduction

Configuration Overview

What is Configuration Mode?

Configuration can be thought of as sets of instructions which inform the CMS about how you want it to work when it is switched on. Configuration Mode is the operating environment in which you define these sets of instructions.

WARNING	**The Configuration Mode does not support patient monitoring: when the system is attached to a patient, it must be in the Monitoring Mode.**

Why Configure?

Configuration of the CMS may be required to suit different hospital environments (ICU/OR) and patient characteristics (Adult, Neonate or Pediatric). The grouping of a hospital environment and patient characteristic is known as a *Configuration Set*.

The CMS is pre-configured on installation. These pre-configured settings are known as the *Factory Default Values*. The pre-configured factory default values in any of the Configuration Sets can be changed according to your specific application needs.

How Best to Configure?

The best way to configure the System is to determine and select which groups of values suit the differing patient categories and hospital environment types, for example, an **Adult**, **Neonatal** or **Pediatric** patient in either an **OR** or **ICU** environment. With the values grouped in this way, you do not have to change the ranges for many parameters. For useful application information on selecting the correct patient category, refer to Appendix A in this manual.

Configuration Features

Temporary and Permanent Configuration

The System configuration can be changed temporarily or permanently.

Temporary Configuration Changes

During normal monitoring (in *Monitoring Mode*), you can make temporary alterations to the system configuration to suit a particular application, without permanently changing the system characteristics. These temporary changes are known as *Active Settings*. Any active settings will be lost when the CMS is:

- Switched off for more than 60 seconds.
- Switched from one Configuration Set to another Configuration Set.
- Switched from one Operating Mode to another Operating Mode.

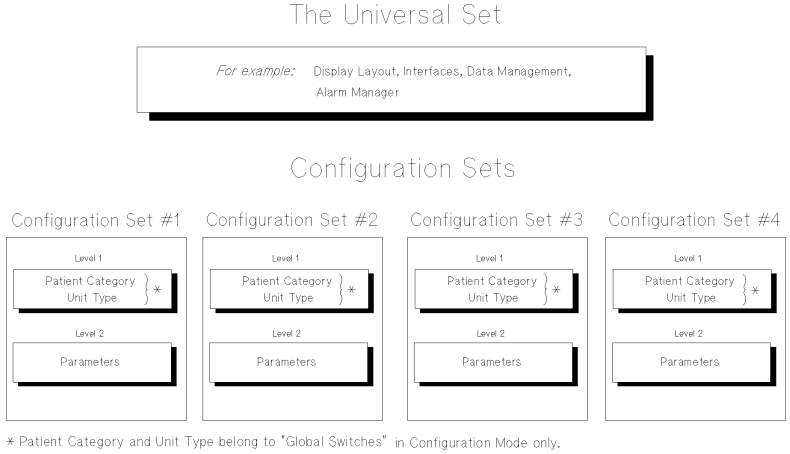
For more information on which System characteristics can be configured in Monitoring Mode, refer to the CMS User's Reference Manual Volume 1.

Permanent Configuration Changes

Permanent configuration changes are made in Configuration Mode and stored in the System. If the System is switched off for longer than 60 seconds, the stored configuration will be recalled when the System is switched on again. Configuration Mode consists of two distinct types of System Settings:

Universal Set to allow the consistent presentation of the patient information (for example, display layout, alarm characteristics, etc.), for all configuration sets.

Configuration Sets to control the way the patient parameters are processed (for example, individual alarm limits).



Universal Set

The values in the Universal Set are responsible for those settings that control, for example, the Display, Alarm Manager, Interfaces, Recorder Mode, and Patient Data Management. Several Parameters (for example, Temperature Differential) and configurable items of some Parameters, are also part of the Universal Set.

NOTE The configurable values of the Universal Set are independent of, and unaffected by, the selected Configuration Set.

The following are examples of some of the configurable settings within the Universal Set:

Display The display settings control the way the patient information is presented. This includes the color and wave positioning, speeds etc.

Alarm Manager The Alarm Manager controls the way the alarms are handled both Latching or Non-latching alarms, alarms suspended, alarms suspended for 3 minutes, etc.

Interfaces These settings control the way in which the interfaces are used for connection to a Serial Distribution Network (SDN), STRIP recorder, RS232 and Analog Output on CMS and NCMS, or Serial Distribution Network (SDN), STRIP recorder, Analog Output and RS232 interface to the Omheda 7800/7810/7900 Anesthesia Machine Ventilators, Printer or Personal Computer for the ACMS.

Configuration Sets

There are four Configuration Sets which are used to store information at two levels. The first level contains information about the patient category (Neonate, Pediatric or Adult), and hospital environment type (ICU, OR), collectively known as *Global Switches*. The second level contains information about the measured parameters, for example, the alarm limits for various parameter values.

Global Switches

This part of the Configuration Set is used to store information about the patient category and hospital environment type.

Patient Category Changing the Patient Category affects the way the patient parameter data is processed. For example, the processing algorithm for ECG is different for Adults and Neonates.

NOTE Changing the Patient Category only changes the processing algorithm software for the parameters. The alarm limits, units and bandwidths are NOT changed automatically. These values must be changed in the Parameter section of the Configuration Set. This is achieved by selecting each parameter in turn, and pressing the **`Factory Defaults`** softkey.

Unit Type (CMS and NCMS only) This is used as a label or note to remind the person configuring the parameters in which environment the Configuration Set is to be used. Certain parameters, such as the ECG bandwidth, would normally be different depending upon whether the environment is ICU or OR.

Note (CMS and NCMS only) Unit Type is only used as a reminder of the proposed hospital environment so that you make the appropriate changes in the *Parameter* section of the Configuration Set. When you change the Unit Type, you must still change the alarm limits, parameter units and bandwidths.

Parameters

This part of the Configuration Set is used to store parameter units, bandwidths and labels for some of the parameters.

Configuration in Monitoring and Service Modes

The following features of the CMS are configured in either Monitoring or Service Mode:

Feature	Required Mode for configuration	Refer to
Parameter Settings Transfer	Service Mode	Service Manual Vol 2
Analog Output	Monitoring Model	Reference Manual Vol 1

For configuration details on the System's VueLink Module, refer to *Philips M1032A VueLink Module Handbook*.

Printing the Configuration

Please refer to Appendix C for details of how printouts of screens of information can be printed.

2
Procedures

Overview

This chapter describes how to change operating modes and how to make and save changes in Configuration Mode.

NOTE	The configuration of the System requires the use of a password. This is to prevent the configuration being altered either accidentally or by unauthorized personnel.

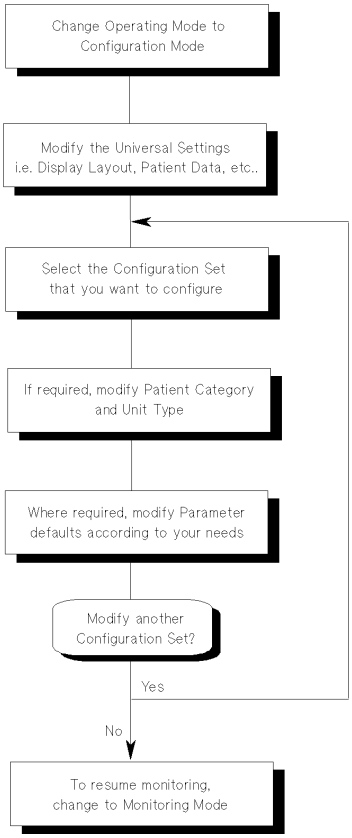

Change Operating Mode to Configuration Mode
Modify the Universal Settings i.e. Display Layout, Patient Data, etc..
Select the Configuration Set that you want to configure
If required, modify Patient Category and Unit Type
Where required, modify Parameter defaults according to your needs
Modify another Configuration Set?
Yes
No
To resume monitoring, change to Monitoring Mode

Figure 1 Configuration Procedure Flow diagram

NOTE	If the power fails during configuration, check all the items you have configured to confirm they have been saved correctly.

Entering and Leaving Configuration Mode

To start configuring the system, you must select Configuration Mode. Once you have completed all the changes to the configuration of the CMS, you must change the operating mode back to Monitoring Mode.

NOTE From Rel. C.0, returning to monitoring mode is allowed without entering a password. Just press Monitor Setup followed by Resume Monitor .

Step	Action	Comment
1	Press Monitor Setup .	The Monitor Setup or Instrument Configuration selection window is displayed.
2	Press **Operating Modes** .	The Operating Mode Task Window displays the current operating mode in words (for example, “Operating Mode - Monitoring”) and prompts for the password.
3	Enter the password. Password: 1245	Use the keys labeled **1** to **5** . If the password is correct, then the **Change OpMode** key is highlighted. If the password is incorrect, the system returns to the Standard Display.
4	Press **Change OpMode** .	The Operating Mode Task Window displays both **Monitor** and **Config** in reverse video, with the current operating mode highlighted.
5	Select the required Operating Mode.	Use the arrow keys or press **Change OpMode** .
6	Press Confirm .	The system now performs a cold-start and switches Operating Modes.
When in Configuration Mode:		
7	Press any Hardkey on the System.	Pressing a hardkey of your choice allows you to enter configuration Task Windows.

When Configuration Mode is entered, the display becomes blank and the message “Config mode active - NO MONITORING!” appears at the top of the screen.

Changing the Configuration Set

This procedure is used to change the active Configuration Set.

NOTE This procedure can also be performed in **Monitoring Mode**.

Step	Action	Comment
1	Press **Monitor Setup**	This displays the Monitor Setup or Instrument Configuration Selection Window.
2	Press **Config Sets**.	This displays the Configuration Set Task Window with the current Active Configuration Set and its Global Switches.
3	Select the required configuration set.	Use the arrow keys or press **Change ConfSet**. The Global Switches for the highlighted Configuration Set are displayed (for example, Adult / OR).
4	Press **Confirm**.	To switch to the highlighted Configuration Set. The system now performs a cold-start and the chosen Configuration Set is made *Active*.

After you have selected the new Configuration Set, you can configure the various items of the Set in Configuration Mode.

Changing Values

Once you have entered Configuration Mode and made !!active!! the Configuration Set you wish to alter, then you can make changes to the values within the active set. Changes to the active set can be made on two levels:

Global Switches This part of the Configuration Set is used to store Patient Category and Unit Type information as well as the ECG filtering frequency.

Parameters This part of the Configuration Set is used to store all the parameter settings.

Change Procedure

The procedure for making any changes is identical. Each set of changes, for example Global Switches or ECG parameters, have their own Task Window that displays the possible items that can be changed.

The Task Window displays all the items that can be changed and their current values. The first item in the Task Window is highlighted. The procedure to change the values is described in the following steps:

Step	Action	Comment
1	Select the item you want to change (for example *Patient Categ*).	Use the arrow keys or **`Select Item`**.
2	Press **`Change Content`**.	The lower part of the Task Window is used to display the list of values that can be used. For example *Patient categ* would be: Adult, Pediatric, Neonate
3	The current value is highlighted. Highlight the new value of the item.	Use the arrow keys or **`Change Content`**. The value in the upper half of the Task Window changes accordingly.
4	Repeat Steps 1 to 3 for all the items you wish to change in the Task Window.	

Step	Action	Comment
5	Now you have made the changes to all the items in the Task Window, you can press:	
	Store Settings	To save the changes you have made to the settings.
	Restore Settings	To recall the previous values for the settings.
	Factory Defaults	To recall the factory defaults for the settings.
6	Press Confirm	To confirm your choice.

NOTE The factory defaults that are recalled will depend on the active Patient Category and Unit Type of the Configuration Set.

After pressing Confirm, do not continue to operate the monitor until the prompt message “Active values stored as user defaults” is displayed.

3
Configuration Tables

Overview

This chapter lists the Universal Settings, Configuration Sets, Parameter Settings and Output Interfaces that can be changed. The content of each task window is listed in tabular format.

Each table consists of four columns:

- Column one contains the configurable *Item Name*.
- Column two contains the *Factory Default Values*.
- Column three lists all the possible values, *User Default Values*, that can be selected for each configurable item.
- Column four has been left blank, and can be used for keeping a record of the items that you configure.

The final page of this chapter is a sign-off sheet which can be used to record who was responsible for the configuration changes.

Universal Settings

The Universal Settings are generally independent of, and unaffected by, the Configuration Settings. However, there are some exceptions. Configurable items of the Universal Settings that are affected by the Configuration Settings are highlighted in a note accompanying the appropriate table.

Alarms Configuration Default Table

To access the Alarm information press:

Alarms/Volume → **Alarms Config**.

Item Name	Factory Default Values	User Default Values	User Configuration
QRS tone volume	45	15 to 255 in steps of 15 or, 0 to 255[1]	
Alarm tone vol	120	15 to 255 in steps of 15, or 0 to 255[2]	
Prompt tone vol	60	0 to 255 in steps of 15	
Alarm Suspend	Infinite	1, 2, 3 mins or Infinite	
Visual & Audible	Latched	Latched, Nonlatched, VisL AudNL[3]	
Alarm Reminder	On	On, Off or Re-Alarming (see note below)	
Relay sensitive.	RedYellow	Red, RedYell, RedYell.Inop, Red Inop	
QRS type	QRS Tone	QRS Tick or QRS Tone	
Lowend QRS tone	Inaudible	Audible or Inaudible	
Lowend Al. tone	Audible (15)	Audible (15) or Inaudible (0) Range (0-255)	
Maintn VisualAl	No	Yes or No[4](see “Maintain Visual Alarms” note below)	
Reminder Time	3 mins	2 or 3 mins (see “Alarm Reminder” note below)	

1. Dependent on selection of item *Lowend QRS. tone*.
2. Dependent on selection of item *Lowend AL. tone*.
3. Visual alarms are latched, audible alarms nonlatched
Central Station acts on visual alarm setting only.
4. If ’Maintn VisualAl’ is set to Yes, all numerics for the active alarming parameters (or latched alarms) will continue to blink, even if alarms are suspended or the individual parameter alarm is switched off.

NOTE **Maintain Visual Alarms**

If **Maintn VisualAl** is set to **Yes**, an alarm which has been silenced and then suspended, will remain silent even if an instrument alarm is reactivated. To ensure that an alarm continues to sound after it has been silenced and suspended, you must set the item **Maintn VisualAl** to **No**.

Note **Alarm Reminder**

- If the alarm reminder is configured to “On”, an active silenced alarm will be re-announced (for 6 seconds) after the configured Alarm Reminder Time (temporary acknowledgment).
- If the alarm reminder is configured to “Off”, an active silenced alarm will not be re-announced (indefinite acknowledgment).
- If the alarm reminder is configured to “Re-Alarming”, an active silenced alarm will be re-announced after the configured Alarm Reminder Time has passed. The alarm tone will sound continuously until it is silenced by pressing the Silence/Reset key.

Note **French language CMSs only.**

If French Homologation behaviour is required, all settings are configurable in Service mode under “Global Switches”.

If conforming to these standards, the following alarm configurations must be selected:

- Prompt tone volume

  60 to 255 in steps of 15

- Alarm suspend

  3 Min: for a SDN networked environment

  Infinite: for a non-SDN networked environment.

  Ensure that the monitor’s *Alarm Reminder* configuration corresponds to the monitor’s environment.

- Alarm Reminder

  - If the alarm reminder is configured to “On”, an active silenced alarm will be re-announced after 2 or 3 minutes (temporary acknowledgment) (3 minutes for the ACMS).
  - If the alarm reminder is configured to “Off”, an active silenced alarm will not be re-announced (indefinite acknowledgment).

Ensure that the label provided for the monitor corresponds to the monitor’s configuration for *Alarm Reminder*.

Alarms On/Off Default Table

To access the Alarm information press: Alarms/Volume → **Alarms On/Off**.

The table lists all existing features. Availability depends upon the model or option selected.

Item Name		Factory Default Values	User Default Values	User Configuration
Parameter	**Label**			
HR	HR	On[1]	On or Off	
ST-ch1	ST1	On	On or Off	
ST-ch2	ST2	On	On or Off	
ST-ch3	ST3	On	On or Off	
Pulse	Pulse	On	On or Off	
Press 1	Any	On	On or Off	
Press 2	Any	On	On of Off	
Press 3	Any	On	On or Off	
Press 4	Any	On	On or Off	
Press 5	Any	On	On or Off	
Press 6	Any	On	On or Off	
CPP	CPP	On	On or Off	
NBP	NBP	On	On or Off	
SpO_2	SpO_2	On	On or Off	
SpO_2 2	SpO_2 2	On	On or Off	
$ETCO_2$		On	On or Off	
AWRR		On	On or Off	
$IMCO_2$		On	On or Off	
FIO_2	FIO_2	On	On or Off	
Resp	Resp	On	On or Off	
$tcpO_2$		On	On or Off	
$tcpCO_2$		On	On or Off	
AG etO_2[2]	etO_2	On	On or Off	
AG inO_2[2]	inO_2	On	On or Off	
AG $ETCO_2$[2]	$ETCO_2$	On	On or Off	

Item Name		Factory Default Values	User Default Values	User Configuration
Parameter	Label			
AG AWRR[2]	AWRR	On	On or Off	
AG $IMCO_2$[2]	$IMCO_2$	On	On or Off	
AG in N_2O[2]	in N_2O	On	On or Off	
Tblood	Tblood	On	On or Off	
Temp 1	T1	On	On or Off	
Temp 2	T2	On	On or Off	
Temp 3	T3	On	On or Off	
Temp 4	T4	On	On or Off	
CCO	CCO	On	On or Off	
BIS	BIS	On	On or Off	

1. HR/Pulse alarm exceptions:
   - The on/off alarm status for HR and Pulse, cannot be controlled through this configuration alone. The desired parameter must also be selected in the 'HR/Pulse configuration task window'. Without this consistency the required alarm will not be activated in monitoring mode.
   - The above mentioned consistency must also be adhered to if the 'HR Alarms On/Off' control has been 'disabled'.
   - If Arrhythmia is assigned, the HR alarm is automatically switched off and pulse is switched on. The original alarm setting is preserved, and restored, as soon as arrhythmia is deactivated.
2. ACMS only.

Other Patients (Overview) Default Table

To access the Other Patient information press:

Other Patients . Then the required softkey.

NOTE Parameters that have more than one wave or numeric will occupy more than one slot in the priority list. However, they will only appear once in the broadcast priority list.

WARNING **Do not alter the parameter priorities of (2) to (6); only use the factory default settings.**

The table lists all existing features. Availability depends upon the model or option selected.

Item Name	Factory Default Values	User Default Values	User Configuration
Broadcast Parameter: Press: Other Patients → Broadcst Param			
Priority #1	ECG	ECG	
Priority #2	PRESS 1	Do not alter this setting	
Priority #3	PRESS 2	Do not alter this setting	
Priority #4	PRESS 3	Do not alter this setting	
Priority #5	PRESS 4	Do not alter this setting	
Priority #6	RESP	Do not alter this setting	
Priority #7	PLETH	Any Parameter	
Priority #8	PULSE	Any Parameter	
Priority #9	SpO_2	Any Parameter	
Priority #10	NBP	Any Parameter	
Priority #11	C.O.	Any Parameter	
Priority #12	CCO	Any Parameter	
Priority #13	TEMP 1	Any Parameter	
Priority #14	TEMP 2	Any Parameter	
Priority #15	DIFF 1	Any Parameter	
Priority #16	CO_2	Any Parameter	
Priority #17	AirwayCO_2	Any Parameter	
Priority #18	SvO_2	Any Parameter	
Priority #19	FIO_2	Any Parameter	
Priority #20	ST	Any Parameter	
Priority #21	PAWP	Any Parameter	
Priority #22	CPP	Any Parameter	
Priority #23	PRESS 5	Any Parameter	
Priority #24	PRESS 6	Any Parameter	
Priority #25	VueLink B	Any Parameter	
Priority #26	VueLink B	Any Parameter	
Priority #27	VueLink B	Any Parameter	
Priority #28	VentIf	Any Parameter	
Priority #28	VueLink A	Any Parameter	
Priority #30	VueLink A	Any Parameter	
Priority #31	$tcpO_2$	Any Parameter	

Item Name	Factory Default Values	User Default Values	User Configuration
Priority #32	tcpCO_2	Any Parameter	
Priority #33	BIS	Any Parameter	
Broadcast Parameter: Press: Other Patients → `Broadcst Param`			
Alarm Sensitivity	RYI	R, RY, RI or RYI	
Receive Silenced Alarms	Yes (see note below)	Yes or No	
Overview Controls: Press: Other Patients → `Overview Alarms`			
Extended CareUnit[1]	No	Yes or No	
Group	All	All, A, B, C, D, E, F, G	
Send Alarms	Yes	Yes or No	
Receive Alarms	Yes	Yes or No	

1. This item should only be configured to “Yes” if the monitor is connected to an Extended CareUnit to avoid unwanted network related malfunction INOPS. For more information, refer to the User’s Reference Manual (Volume 1).

Note

- *Receive Silenced Alarms* only has an affect when “Yes” is selected for *Receive Alarms*.
- When “Yes” is selected for *Receive Silenced Alarms*, the Alarm Bed window will be retained, and the message “Silenced” appears when the remote alarm is silenced.
- When “No” is selected for *Receive Silenced Alarms*, the Alarm Bed window will disappear when the remote alarm is silenced.

The “Show Broadcast” Task Window provides an overview of all current prioritized parameters that are send over the SDN network. The list is updated after configuring and storing the settings in the “Broadcast Parameter” configuration Task Window. press:

`Show Broadcst` key to enter the **`Show Broadcast Task`** Window.

Display Default Tables

The following tables give the factory default values and the values that can be selected as user defaults for the display. Separate tables are provided for the following Models of the CMS and NCMS:

- Model 44(S)
- Model 64(S)
- Model 56(S)
- Model 68(S)
- Model 48(S)

and the following models of the ACMS:

- Model 76(S)
- Model 84(S)
- Model 88(S)

This is followed by the **Parameter Display Colors** table dedicated to the colors available for waves on CMS Models 64(S), 68(S), 48(S), and for the ACMS Model 88(S).

The display values are independent of, and unaffected by the chosen Configuration Set.

NOTE	Color assignment is determined by the individual parameter, and can therefore not be configured for an independent display. See the **Parameter Display Colors** table for possible color configurations. All other User Default Values *can* be configured for an independent display.

To make changes to the Display Setup, press:

Monitor Setup → **Display1 Setup**.

To make changes to the Independent Display Setup (if available), press:

Monitor Setup → **Display2 Setup** *or* **Display3 Setup**.

To access a different Screen (for example: Screen A, B, C, D or E), press:

Monitor Setup → **Display1 Setup** → Choose Screen.

Table 1 CMS Model 44(S) Factory Defaults

(see the Parameter Display Colors Table for color configuration)

Item Name	Factory Default Values				
Realtime waves					
	SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	ECG CH1	ECG CH1	ECG CH1	As Screen C	As Screen C
Channel #2	PLETH	PLETH	PLETH		
Channel #3	PRESS 1	PRESS 1	Blank		
Channel #4	RESP	RESP	RESP		
Screen Label	Standard	oxyCRG	Standard		
Number Of Waves	4 waves	4 waves	4 waves		
Overlap	#1	#1	#1		
Application Window[1]	None	oxyCRG	Split		
Wave Replace[2]	Enabled	Enabled	Enabled		
Trace Mode	Fixed	Fixed	Fixed		
Numerics Prompt[3]	Yes	Yes	Yes		
Realtime speeds:					
	25mm/s for all except RESP and CO_2 (6.25mm/s)				

1. OxyCRG and CSA application windows can only be active for one Display at a time. If it OxyCRG or CSA application windows are chosen for more than one display, it will only appear on lower number display.
2. If Wave Replace is enabled, CMS will automatically assign measured waves to any empty channels. Disable this feature if the display configuration should not be changed when measurements are not available.
3. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Numeric On/Off:

Press: Monitor Setup → **Display1 Setup** → Choose Screen → **Numeric On/Off**.

If you wish the new setting to be retained after a cold-start has been performed, press: Confirm.

Table 2 CMS Model 44(S) User Configuration

(see the Parameter Display Colors Table for color configuration)

Item Name	User Default Values	User Configuration				
Realtime waves						
		SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	Any wave can be assigned to any channel of 1 to 4 (note number of waves in Wave Format)					
Channel #2						
Channel #3						
Channel #4						
Screen Label	Standard, Surgeon, Cardio-vascular, Swan-Ganz, Neuro-Surgical, Ventilator, Perfusionist, Induction, Non-invasive, User Def., Blank, or any value typed in on the numeric keypad.					
Number Of Waves	4 Waves					
Overlap	#1 to #4: #1 = non-overlap #2 = waves 2-3 overlap #3 = waves 3-4 overlap #4 = waves 2-4 overlap					
Application Window	OxyCRG, Split Screen, CSA Display or None					
Wave Replace	Enabled or Disabled					
Trace Mode	Fixed or Moving[1]					
Numerics Prompt	Yes or No					
Realtime speeds:						
	6.25, 12.5, 25 or 50 (Each wave can be configured separately)					

1. It is recommended that you use Fixed Trace Mode for Flatscreen and XGA displays.

Table 3 CMS Model 64(S) Factory Defaults

(see the Parameter Display Colors Table for color configuration)

Item Name	Factory Default Values				
Realtime waves					
	SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	ECG CH1	ECG CH1	ECG CH1	ECG CH1	ECG CH1
Channel #2	PRESS 1	PRESS 1	ECG CH2	ECG CH2	ECG CH2
Channel #3	PLETH	PRESS 2	PRESS 1	PRESS 1	PRESS 1
Channel #4	RESP	PRESS 3	PRESS 2	PRESS 2	PRESS 2
Screen Label	Standard	Surgeon	Surgeon	Surgeon	Surgeon
Number Of Waves	4 waves	4 waves	4 waves	4 waves	4 waves
Overlap	#1	#1	#3	#3	#3
Application Window[1]	Split	Split	Split	Split	Split
Wave Replace[2]	Enabled	Enabled	Enabled	Enabled	Enabled
Trace Mode	Fixed	Fixed	Fixed	Fixed	Fixed
Numerics Prompt[3]	Yes	Yes	Yes	Yes	Yes
Realtime speeds:					
	25mm/s for all except RESP and CO_2 (6.25mm/s)				

1. OxyCRG and CSA application windows can only be active for one Display at a time. If it OxyCRG or CSA application windows are chosen for more than one display, it will only appear on lower number display.
2. If Wave Replace is enabled, CMS will automatically assign measured waves to any empty channels. Disable this feature if the display configuration should not be changed when measurements are not available.
3. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Numeric On/Off:

Press: Monitor Setup → **Display1 Setup** → Choose Screen → **Numeric On/Off**.

If you wish the new setting to be retained after a cold-start has been performed, press: Confirm.

Table 4 CMS Model 64(S) User Configuration

(see the Parameter Display Colors Table for color configuration)

Item Name	User Default Values	User Configuration				
Realtime waves						
		SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	Any wave can be assigned to any channel of 1 to 4 (note number of waves in Wave Format)					
Channel #2						
Channel #3						
Channel #4						
Screen Label	Standard, Surgeon, Cardio-vascular, Swan-Ganz, Neuro-Surgical, Ventilator, Perfusionist, Induction, Non-invasive, User Def., Blank, or any value typed in on the numeric keypad.					
Number Of Waves	4 Waves					
Overlap	#1 to #4: #1 = non-overlap #2 = waves 2-3 overlap #3 = waves 3-4 overlap #4 = waves 2-4 overlap					
Application Window	OxyCRG, Split Screen, CSA Display or None					
Wave Replace	Enabled or Disabled					
Trace Mode	Fixed or Moving[1]					
Numerics Prompt	Yes or No					
Realtime speeds:						
	6.25, 12.5, 25 or 50 (Each wave can be configured separately)					

1. It is recommended that you use Fixed Trace Mode for Flatscreen and XGA displays.

Table 5 CMS Model 56(S) Factory Defaults

(see the Parameter Display Colors Table for color configuration)

Item Name	Factory Default Values				
Realtime waves					
	SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	ECG Ch 1	ECG Ch 1	ECG Ch 1	ECG Ch 1	ECG Ch 1
Channel #2	PRESS 1	ECG Ch 2	ECG Ch 2	ECG Ch 2	PRESS 1
Channel #3	PRESS 2	PRESS 1	PRESS 1	PRESS 1	PRESS 2
Channel #4	PRESS 3	PRESS 2	PRESS 2	PRESS 2	PRESS 3
Channel #5	Pleth	PRESS 3	PRESS 3	Pleth	Pleth
Channel #6	CO_2	Pleth	PRESS 3	CO_2	CO_2
Screen Label	Standard	Surgeon	Surgeon	Standard	Standard
Number Of Waves	6 waves	6 waves	6 waves	6 waves	6 waves
Overlap	#1 (non-overlap)	#2 (3-5 overlap)	#2 (3-5 overlap)	#1 (non-overlap)	#1 (non-overlap)
Application Window[1]	Split	Split	Split	Split	CSA
Wave Replace[2]	Enabled	Enabled	Enabled	Enabled	Enabled
Trace Mode	Fixed	Fixed	Fixed	Fixed	Fixed
Numerics Prompt[3]	Yes	Yes	Yes	Yes	Yes
Realtime speeds:					
	25mm/s for all except RESP and CO_2 (6.25mm/s)				

1. OxyCRG and CSA application windows can only be active for one Display at a time. If it OxyCRG or CSA application windows are chosen for more than one display, it will only appear on lower number display.
2. If Wave Replace is enabled, CMS will automatically assign measured waves to any empty channels. Disable this feature if the display configuration should not be changed when measurements are not available.
3. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Numeric On/Off:

Press: Monitor Setup → **Display1 Setup** → Choose Screen → Press: **Numeric On/Off**.

If you wish the new setting to be retained after a cold-start has been performed, press: Confirm .

Table 6 CMS Model 56(S) User Configuration

(see the Parameter Display Colors Table for color configuration)

Item Name	User Default Values	User Configuration				
Realtime waves						
		SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	Any wave can be assigned to any channel of 1 to 6 (note number of waves in Wave Format)					
Channel #2						
Channel #3						
Channel #4						
Channel #6						
Channel #6						
Screen Label	Standard, Surgeon, Cardio-vascular, Swan-Ganz, Neuro-Surgical, Ventilator, Perfusionist, Induction, Non-invasive, User Def., Blank, or any value typed in on the numeric keypad.					
Number Of Waves	4 or 6 Waves					
Overlap	#1 to #7: #1 = non-overlap #2 = waves 3-5 overlap #3 = waves 3-6 overlap #4 = waves 2-5 overlap #5 = waves 2-6 overlap #5 = waves 2-3/4-5 overlap #7 = waves 3-4/5-6 overlap					
Application Window	OxyCRG, Split Screen, CSA Display or None					
Wave Replace	Enabled or Disabled					
Trace Mode	Fixed or Moving[1]					
Numerics Prompt	Yes or No					
Realtime speeds:						
	6.25, 12.5, 25 or 50 (Each wave can be configured separately)					

1. It is recommended that you use Fixed Trace Mode for Flatscreen and XGA displays.

Table 7 CMS Model 68(S) Factory Defaults

(see the Parameter Display Colors Table for color configuration)

Item Name	Factory Default Values				
Realtime waves					
	SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	ECG CH1	ECG CH1	ECG CH1	ECG CH1	ECG CH1
Channel #2	PRESS 1	ECG CH2	ECG CH2	ECG CH2	PRESS 1
Channel #3	PRESS 2	PRESS 1	PRESS 1	PRESS 1	PRESS 2
Channel #4	PRESS 3	PRESS 2	PRESS 2	PRESS 2	PRESS 3
Channel #5	PRESS 4	PRESS 3	PRESS 3	PRESS 3	PRESS 4
Channel #6	PRESS5[1]	PRESS 4	PRESS 4	PRESS 4	CO_2
Channel #7	PLETH	PLETH	PRESS5[1]	PLETH	EEG CH1
Channel #8	RESP	CO_2	PRESS6[1]	CO_2	EEG CH2
Screen Label	Standard	Surgeon	Surgeon	Standard	Neuro
Number Of Waves	8 waves	8 waves	8 waves	8 waves	8 waves
Overlap	#1 (non-overlap)	#2 (3-6 overlap)	#2 (3-6 overlap)	#1 (non-overlap)	#1 (non-overlap)
Application Window[2]	Split	Split	Split	Split	CSAt
Wave Replace[3]	Enabled	Enabled	Enabled	Enabled	Enabled
Trace Mode	Fixed	Fixed	Fixed	Fixed	Fixed
Numerics Prompt[4]	Yes	Yes	Yes	Yes	Yes
Realtime speeds:					
	25mm/s for all except RESP and CO_2 (6.25mm/s)				

1. For model 48(S) the factory default is BLANK.
2. OxyCRG and CSA application windows can only be active for one Display at a time. If it OxyCRG or CSA application windows are chosen for more than one display, it will only appear on lower number display.
3. If Wave Replace is enabled, CMS will automatically assign measured waves to any empty channels. Disable this feature if the display configuration should not be changed when measurements are not available.
4. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Numeric On/Off:

Press: Monitor Setup → **Display1 Setup** → Choose Screen → **Numeric On/Off**. If you wish the new setting to be retained after a cold-start has been performed, press: Confirm.

Table 8 CMS Model 68(S) User Configuration

(see the Parameter Display Colors Table for color configuration)

Item Name	User Default Values	User Configuration				
Realtime waves						
		SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	Any wave can be assigned to any channel of 1 to 8 (note number of waves in Wave Format)					
Channel #2						
Channel #3						
Channel #4						
Channel #5						
Channel #6						
Channel #7						
Channel #8						
Screen Label	Standard, Surgeon, Cardio-vascular, Swan-Ganz, Neuro-Surgical, Ventilator, Perfusionist, Induction, Non-invasive, User Def., Blank, or any value typed in on the numeric keypad.					
Number Of Waves	4, 6 or 8 Waves					
Overlap	#1 to #8: #1 = non-overlap #2 = waves 3-6 overlap #3 = waves 3-8 overlap #4 = waves 2-7 overlap #5 = waves 4-7 overlap #5 = waves 3-5/6-8 overlap #7 = waves 2-4/5-7 overlap #8 = waves 3-4/5-6 overlap					
Application Window	OxyCRG, Split Screen, CSA Display or None					
Wave Replace	Enabled or Disabled					
Trace Mode	Fixed or Moving[1]					
Numerics Prompt[2]	Yes or No					
Realtime speeds:						
	6.25, 12.5, 25 or 50 (Each wave can be configured separately)					

1. It is recommended that you use Fixed Trace Mode for Flatscreen and XGA displays.
2. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Table 9 NCMS Model 48(S) Factory Defaults

(see the Parameter Display Colors Table for color configuration)

Item Name	Factory Default Values				
Realtime waves					
	SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	ECG CH1	ECG CH1	ECG CH1	As Screen C	As Screen C
Channel #2	PLETH	PLETH	PLETH		
Channel #3	Blank	PRESS 1	PLETH 2		
Channel #4	PRESS 1	PRESS 2	PRESS 1		
Channel #5	PRESS 2	PRESS 3	Blank		
Channel #6	PRESS 3	Blank	Blank		
Channel #7	Blank	Blank	Blank		
Channel #8	RESP	RESP	RESP		
Screen Label	Standard	Surgeon	Surgeon		
Number Of Waves	8 waves	8 waves	8 waves		
Overlap	#1 (non-overlap)	#1 (non-overlap)	#1 (non-overlap)		
Application Window[1]	None	OxyCRG	Split		
Wave Replace[2]	Enabled	Enabled	Enabled		
Trace Mode	Fixed	Fixed	Fixed		
Numerics Prompt[3]	Yes	Yes	Yes		
Realtime speeds:					
	25mm/s for all except RESP and CO_2 (6.25mm/s)				

1. OxyCRG and CSA application windows can only be active for one Display at a time. If it OxyCRG or CSA application windows are chosen for more than one display, it will only appear on lower number display.
2. If Wave Replace is enabled, CMS will automatically assign measured waves to any empty channels. Disable this feature if the display configuration should not be changed when measurements are not available.
3. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Numeric On/Off:

Press: Monitor Setup → **Display1 Setup** → Choose Screen → **Numeric On/Off**. If you wish the new setting to be retained after a cold-start has been performed, press: Confirm.

Table 10 NCMS Model 48(S) User Configuration

(see the Parameter Display Colors Table for color configuration)

Item Name	User Default Values	User Configuration				
Realtime waves						
		SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	Any wave can be assigned to any channel of 1 to 8 (note number of waves in Wave Format)					
Channel #2						
Channel #3						
Channel #4						
Channel #5						
Channel #6						
Channel #7						
Channel #8						
Screen Label	Standard, Surgeon, Cardio-vascular, Swan-Ganz, Neuro-Surgical, Ventilator, Perfusionist, Induction, Non-invasive, User Def., Blank, or any value typed in on the numeric keypad.					
Number Of Waves	4, 6 or 8 Waves					
Overlap	#1 to #8: #1 = non-overlap #2 = waves 3-6 overlap #3 = waves 3-8 overlap #4 = waves 2-7 overlap #5 = waves 4-7 overlap #5 = waves 3-5/6-8 overlap #7 = waves 2-4/5-7 overlap #8 = waves 3-4/5-6 overlap					
Application Window	OxyCRG, Split Screen, CSA Display or None					
Wave Replace	Enabled or Disabled					
Trace Mode	Fixed or Moving[1]					
Numerics Prompt[2]	Yes or No					
Realtime speeds:						
	6.25, 12.5, 25 or 50 (Each wave can be configured separately)					

1. It is recommended that you use Fixed Trace Mode for Flatscreen and XGA displays.
2. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Table 11 ACMS Model 84(S) Factory Defaults

(see the Parameter Display Colors Table for color configuration)

Item Name	Factory Default Values				
Realtime waves					
	SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	ECG CH1	ECG CH1	ECG CH1	As Screen C	As Screen C
Channel #2	PRESS 1	PRESS 1	PRESS 1		
Channel #3	PLETH	PRESS 2	PRESS 2		
Channel #4	RESP	PRESS 3	AG CO_2		
Screen Label	Standard	Surgeon	Blank		
Number Of Waves	4 waves	4 waves	4 waves		
Overlap	#1 (non-overlap)	#2 (3-5 overlap)	#2 (2-3 overlap)		
Application Window[1]	Split	Split	Split		
Wave Replace[2]	Enabled	Enabled	Enabled		
Trace Mode	Fixed	Fixed	Fixed		
Numerics Prompt[3]	Yes	Yes	Yes		
Realtime speeds:					
	25mm/s for all except: RESP, CO_2, AG O_2, AG CO_2, AG Agent (6.25mm/s)				

1. OxyCRG and CSA application windows can only be active for one Display at a time. If it OxyCRG or CSA application windows are chosen for more than one display, it will only appear on lower number display.
2. If Wave Replace is enabled, CMS will automatically assign measured waves to any empty channels. Disable this feature if the display configuration should not be changed when measurements are not available.
3. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Numeric On/Off:

Press: Monitor Setup → **Display1 Setup** → Choose Screen → **Numeric On/Off**.

If you wish the new setting to be retained after a cold-start has been performed, press: Confirm .

Table 12 ACMS Model 84(S) User Configuration

(see the Parameter Display Colors Table for color configuration)

Item Name	User Default Values	User Configuration				
Realtime waves						
		SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	Any wave can be assigned to any channel of 1 to 6 (note number of waves in Wave Format)					
Channel #2						
Channel #3						
Channel #4						
Channel #5						
Channel #6						
Screen Label	Standard, Surgeon, Cardio-vascular, Swan-Ganz, Neuro-Surgical, Ventilator, Perfusionist, Induction, Non-invasive, User Def., Blank, or any value typed in on the numeric keypad.					
Number Of Waves	4 or 6 Waves					
Overlap	#1 to #7: #1 = non-overlap #2 = waves 3-5 overlap #3 = waves 3-6 overlap #4 = waves 2-5 overlap #5 = waves 2-6 overlap #5 = waves 2-3/4-5 overlap #7 = waves 3-4/5-6 overlap					
Application Window	OxyCRG, Split Screen, CSA Display or None					
Wave Replace	Enabled or Disabled					
Trace Mode	Fixed or Moving[1]					
Numerics Prompt	Yes or No					
Realtime speeds:						
	6.25, 12.5, 25 or 50 (Each wave can be configured separately)					

1. It is recommended that you use Fixed Trace Mode for Flatscreen and XGA displays.

Table 13 ACMS Model 76(S) Factory Defaults

(see the Parameter Display Colors Table for color configuration)

Item Name	Factory Default Values				
Realtime waves					
	SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	ECG CH1	ECG CH1	ECG CH1	ECG CH1	ECG CH1
Channel #2	PRESS 1	ECG CH2	PRESS 1	ECG CH2	PRESS 1
Channel #3	PLETH	PRESS 1	PRESS 2	PRESS 1	PRESS 2
Channel #4	AG CO_2	PRESS 2	Blank	PRESS 2	EEG CH1
Channel #5	Blank	PRESS 3	Blank	PLETH	EEG CH2
Channel #6	Blank	AG CO_2	AG CO_2	AG CO_2	AG CO_2
Screen Label	Standard	Cardio-Vascular	Swan-Ganz	Standard	Neuro
Number Of Waves	6 waves	6 waves	6 waves	6 waves	6 waves
Overlap	#1 (non-overlap)	#2 (3-5 overlap)	#2 (3-5 overlap)	#1 (non-overlap)	#1 (non-overlap)
Application Window[1]	Split	Split	Split	Split	CSA
Wave Replace[2]	Enabled	Enabled	Enabled	Enabled	Enabled
Trace Mode	Fixed	Fixed	Fixed	Fixed	Fixed
Numerics Prompt[3]	Yes	Yes	Yes	Yes	Yes
Realtime speeds:					
	25mm/s for all except: RESP, CO_2, AG O_2, AG CO_2, AG Agent (6.25mm/s)				

1. OxyCRG and CSA application windows can only be active for one Display at a time. If it OxyCRG or CSA application windows are chosen for more than one display, it will only appear on lower number display.
2. If Wave Replace is enabled, CMS will automatically assign measured waves to any empty channels. Disable this feature if the display configuration should not be changed when measurements are not available.
3. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Numeric On/Off:

Press: Monitor Setup → **Display1 Setup** → Choose Screen → **Numeric On/Off**.

If you wish the new setting to be retained after a cold-start has been performed, press: Confirm .

Table 14 ACMS Model 76(S) User Configuration

(see the Parameter Display Colors Table for color configuration)

Item Name	User Default Values	User Configuration				
Realtime waves						
		SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	Any wave can be assigned to any channel of 1 to 6 (note number of waves in Wave Format)					
Channel #2						
Channel #3						
Channel #4						
Channel #5						
Channel #6						
Screen Label	Standard, Surgeon, Cardio-vascular, Swan-Ganz, Neuro-Surgical, Ventilator, Perfusionist, Induction, Non-invasive, User Def., Blank, or any value typed in on the numeric keypad.					
Number Of Waves	4 or 6 Waves					
Overlap	#1 to #7: #1 = non-overlap #2 = waves 3-5 overlap #3 = waves 3-6 overlap #4 = waves 2-5 overlap #5 = waves 2-6 overlap #5 = waves 2-3/4-5 overlap #7 = waves 3-4/5-6 overlap					
Application Window	OxyCRG, Split Screen, CSA Display or None					
Wave Replace	Enabled or Disabled					
Trace Mode	Fixed or Moving[1]					
Numerics Prompt	Yes or No					
Realtime speeds:						
	6.25, 12.5, 25 or 50 (Each wave can be configured separately)					

1. It is recommended that you use Fixed Trace Mode for Flatscreen and XGA displays.

Table 15 ACMS Model 88(S) Factory Defaults

(see the Parameter Display Colors Table for color configuration)

Item Name	Factory Default Values				
Realtime waves					
	SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	ECG CH1	ECG CH1	ECG CH1	ECG CH1	ECG CH1
Channel #2	ECG CH2	ECG CH2	PRESS 1	ECG CH2	PRESS 1
Channel #3	PRESS 1	PRESS 1	PRESS 2	PRESS 1	PRESS 2
Channel #4	PRESS 2	Blank	Blank	PRESS 2	PRESS 3
Channel #5	PRESS 3	PRESS 2	Blank	PRESS 3	PRESS 4
Channel #6	PLETH	PRESS 3	Blank	PRESS 4	AG CO_2
Channel #7	AG Agent	PLETH	PLETH	PLETH	EEG CH1
Channel #8	AG CO_2	AG CO_2	AG CO_2	AG CO_2	EEG CH2
Screen Label	Standard	Cardio-Vascular	Swan-Ganz	Standard	Neuro
Number Of Waves	#1 (non-overlap)	#8 (3-4/5-6 overlap)	#2 (3-5 overlap)	#1 (non-overlap)	#1 (non-overlap)
Overlap	#1	#2	#3	#3	#3
Application Window[1]	Split	Split	Split	Split	Split
Wave Replace[2]	Enabled	Enabled	Enabled	Enabled	Enabled
Trace Mode	Fixed	Fixed	Fixed	Fixed	Fixed
Numerics Prompt[3]	Yes	Yes	Yes	Yes	Yes
Realtime speeds:					
	25mm/s for all except: RESP, CO_2, AG O_2, AG CO_2, AG Agent (6.25mm/s)				

1. OxyCRG and CSA application windows can only be active for one Display at a time. If it OxyCRG or CSA application windows are chosen for more than one display, it will only appear on lower number display.
2. If Wave Replace is enabled, CMS will automatically assign measured waves to any empty channels. Disable this feature if the display configuration should not be changed when measurements are not available.
3. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Numeric On/Off:

Press: **Monitor Setup** → **`Display1 Setup`** → Choose Screen → **`Numeric On/Off`**.

If you wish the new setting to be retained after a cold-start has been performed, press: Confirm .

Table 16 ACMS Model 88(S) User Configuration

(see the Parameter Display Colors Table for color configuration)

Item Name	User Default Values	User Configuration				
Realtime waves						
		SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	Any wave can be assigned to any channel of 1 to 8 (note number of waves in Wave Format)					
Channel #2						
Channel #3						
Channel #4						
Channel #5						
Channel #6						
Channel #7						
Channel #8						
Screen Label	Standard, Surgeon, Cardio-vascular, Swan-Ganz, Neuro-Surgical, Ventilator, Perfusionist, Induction, Non-invasive, User Def., Blank, or any value typed in on the numeric keypad.					
Number Of Waves	4, 6 or 8 Waves					
Overlap	#1 to #8: #1 = non-overlap #2 = waves 3-6 overlap #3 = waves 3-8 overlap #4 = waves 2-7 overlap #5 = waves 4-7 overlap #5 = waves 3-5/6-8 overlap #7 = waves 2-4/5-7 overlap #8 = waves 3-4/5-6 overlap					
Application Window	OxyCRG, Split Screen, CSA Display or None					
Wave Replace	Enabled or Disabled					
Trace Mode	Fixed or Moving[1]					
Numerics Prompt[2]	Yes or No					
Realtime speeds:						
	6.25, 12.5, 25 or 50 (Each wave can be configured separately)					

1. It is recommended that you use Fixed Trace Mode for Flatscreen and XGA displays.
2. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Table 17 ACMS Model 76(S) Second and Third Independent Display Factory Defaults

(see the Parameter Display Colors Table for color configuration)

Item Name	Factory Default Values				
Realtime waves					
	SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	ECG CH1	ECG CH1	ECG CH1	As Screen C	As Screen C
Channel #2	PRESS 1	PRESS 1	PRESS 1		
Channel #3	PRESS 2	PRESS 2	Blank		
Channel #4	PRESS 3	PRESS 3	PRESS 2		
Channel #5	Blank	Blank	Blank		
Channel #6	Blank	Blank	Blank		
Screen Label	Surgeon	Perfusionist	Blank		
Number Of Waves	6 waves	6 waves	6 waves		
Overlap	#4 (2-5 overlap)	#4 (2-5 overlap)	#6 (2-3/4-5 overlap)		
Application Window[1]	Split	Split	Split		
Wave Replace[2]	Enabled	Enabled	Enabled		
Trace Mode	Fixed	Fixed	Fixed		
Numerics Prompt[3]	Yes	Yes	Yes		
Realtime speeds:					
	25mm/s for all except: RESP, CO_2, AG O_2, AG CO_2, AG Agent (6.25mm/s)				

1. OxyCRG and CSA application windows can only be active for one Display at a time. If it OxyCRG or CSA application windows are chosen for more than one display, it will only appear on lower number display.
2. If Wave Replace is enabled, CMS will automatically assign measured waves to any empty channels. Disable this feature if the display configuration should not be changed when measurements are not available.
3. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Numeric On/Off:

Press: Monitor Setup → **Display1 Setup** → Choose Screen → **Numeric On/Off**.

If you wish the new setting to be retained after a cold-start has been performed, press: Confirm .

Table 18 ACMS Model 76(S) Second and Third Independent Display User Configuration

(see the Parameter Display Colors Table for color configuration)

Item Name	User Default Values	User Configuration				
Realtime waves						
		SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	Any wave can be assigned to any channel of 1 to 6 (note number of waves in Wave Format)					
Channel #2						
Channel #3						
Channel #4						
Channel #5						
Channel #6						
Screen Label	Standard, Surgeon, Cardio-vascular, Swan-Ganz, Neuro-Surgical, Ventilator, Perfusionist, Induction, Non-invasive, User Def., Blank, or any value typed in on the numeric keypad.					
Number Of Waves	4 or 6 Waves					
Overlap	#1 to #7: #1 = non-overlap #2 = waves 3-5 overlap #3 = waves 3-6 overlap #4 = waves 2-5 overlap #5 = waves 2-6 overlap #5 = waves 2-3/4-5 overlap #7 = waves 3-4/5-6 overlap					
Application Window	OxyCRG, Split Screen, CSA Display or None					
Wave Replace	Enabled or Disabled					
Trace Mode	Fixed or Moving[1]					
Numerics Prompt	Yes or No					
Realtime speeds:						
	6.25, 12.5, 25 or 50 (Each wave can be configured separately)					

1. It is recommended that you use Fixed Trace Mode for Flatscreen and XGA displays.

Table 19 ACMS Model 88(S) Second and Third Independent Display Factory Defaults

(see the Parameter Display Colors Table for color configuration)

Item Name	Factory Default Values				
Realtime waves					
	SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	ECG CH1	ECG CH1	ECG CH1	As Screen C	As Screen C
Channel #2	Blank	Blank	Blank		
Channel #3	PRESS 1	PRESS 1	PRESS 1		
Channel #4	PRESS 2	PRESS 2	PRESS 2		
Channel #5	PRESS 3	PRESS 3	PRESS 3		
Channel #6	Blank	Blank	Blank		
Channel #7	Blank	Blank	Blank		
Channel #8	Blank	Blank	Blank		
Screen Label	Surgeon	Perfusionist	Blank		
Number Of Waves	8 waves	8 waves	8 waves		
Overlap	#3 (3-8 overlap)	#3 (3-8 overlap)	#3 (3-8 overlap)		
Application Window[1]	Split	Split	Split		
Wave Replace[2]	Enabled	Enabled	Enabled		
Trace Mode	Fixed	Fixed	Fixed		
Numerics Prompt[3]	Yes	Yes	Yes		
Realtime speeds:					
	25mm/s for all except: RESP, CO_2, AG O_2, AG CO_2, AG Agent (6.25mm/s)				

1. OxyCRG and CSA application windows can only be active for one Display at a time. If it OxyCRG or CSA application windows are chosen for more than one display, it will only appear on lower number display.
2. If Wave Replace is enabled, CMS will automatically assign measured waves to any empty channels. Disable this feature if the display configuration should not be changed when measurements are not available.
3. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

Numeric On/Off:
Press: Monitor Setup → **Display1 Setup** → Choose Screen → **Numeric On/Off**.
If you wish the new setting to be retained after a cold-start has been performed, press: Confirm .

Table 20 ACMS Model 88(S) Second and Third Independent Display User Configuration

(see the Parameter Display Colors Table for color configuration)

Item Name	User Default Values	User Configuration				
Realtime waves						
		SCREEN A	**SCREEN B**	**SCREEN C**	**SCREEN D**	**SCREEN E**
Channel #1	Any wave can be assigned to any channel of 1 to 8 (note number of waves in Wave Format)					
Channel #2						
Channel #3						
Channel #4						
Channel #5						
Channel #6						
Channel #7						
Channel #8						
Screen Label	Standard, Surgeon, Cardio-vascular, Swan-Ganz, Neuro-Surgical, Ventilator, Perfusionist, Induction, Non-invasive, User Def., Blank, or any value typed in on the numeric keypad.					
Number Of Waves	4, 6 or 8 Waves					
Overlap	#1 to #8: #1 = non-overlap #2 = waves 3-6 overlap #3 = waves 3-8 overlap #4 = waves 2-7 overlap #5 = waves 4-7 overlap #5 = waves 3-5/6-8 overlap #7 = waves 2-4/5-7 overlap #8 = waves 3-4/5-6 overlap					
Application Window	OxyCRG, Split Screen, CSA Display or None					
Wave Replace	Enabled or Disabled					
Trace Mode	Fixed or Moving[1]					
Numerics Prompt[2]	Yes or No					
Realtime speeds:						
	6.25, 12.5, 25 or 50 (Each wave can be configured separately)					

1. It is recommended that you use Fixed Trace Mode for Flatscreen and XGA displays.
2. When “Yes” is selected for this item, the reminder message"Not all numerics displayed" will appear at the top of the display screen if one or more of the parameter numerics are switched off.

To access the Colors information press: **Monitor Setup** → **Colors** .

The table lists all existing features. Availability depends upon the model or option selected.

Table 21 CMS Parameter Colors

Item Name	Factory Default Values	User Configuration
Note: *Colors are Display configuration independent)* **User Default Values:** Red, Yellow, Green, Cyan, White, Blue or Magenta		
ECG	Green	
PRESS 1	Red	
PRESS 2	Yellow	
PRESS 3	Cyan	
PRESS 4	Magenta	
PRESS 5	Green	
PRESS 6	Green	
CPP	Green	
NBP	Green	
PAWP	Green	
C.O.	Green	
SpO_2	Cyan	
SpO_2 2	Blue	
PLETH	Cyan	
PLETH 2	Blue	
SvO_2	Yellow	
CO_2	Green	
FIO_2	Green	
RESP	White	
$tcpO_2$	Blue	
$tcpCO_2$	Green	
VentIf[1]	Green	
$AirwyO_2$	Blue	
$AirwyCO_2$	Blue	
$AirwyN_2$ O	Yellow	
AirwyAGT	Green	
EEG	Yellow	
BIS	Yellow	

Item Name	Factory Default Values	User Configuration
CCO	Green	
TEMP1	Green	
TEMP2	Green	
TEMP3	Green	
TEMP4	Green	
DIFF1	Green	
DIFF2	Green	
VueLink A[2]	Green	
VueLink B[2]	Green	

1. Only available with the 7900 Ohmeda Ventilator Interface.
2. The default color for some parameters provided by this Module is overwritten by the color configuration selected in the Configuration Task Window of the Module.

NOTE The color of each numeric is identical to its source parameter.

The color for ST is the same as for ECG.

Patient Data Management Default Tables

Note The following items are Configuration Set dependent:

- Database Storage
- Weight Units
- BSA Formula

To access the Patient Data information press:

Trend/Calcs → **Patient Data** .

Table 22 Patient Data

Item Name	Factory Default Values	User Default Values	User Configuration
Database Storage[1]	16 parameters at 24 hrs (ICU) 16 parameters at 4 hrs (OR)[2]	Normal Database: 16 at 24, 16 at 4[2] Extended Database: 16 at 9[2], 16 at 48, 32 at 4[2] or 32 at 24	
Calculation Time Reference[3]	C.O. (Cardiac Output) Time	C.O. Time or Current Time	
Height Units	cm	in or cm	
Weight Units[1]	kg (Adult/Ped) g (Neo)	lb, g, or kg	
Hemo Pressure Units	mmHg	kPa or mmHg	
Gas Pressure Units	mmHg	kPa or mmHg	
HGB units (used by Oxy Calcs)	g/dl	g/dl or mmol/l	
Store Alarm Suspend[4]	Yes	Yes or No	
BSA Formula[1]	Dubois (Adults/Ped) Boyd (Neo)	Dubois or Boyd	
Printer Type	HP LaserJet	HP ThinkJet, HP QuietJet, HP DeskJet, HP LaserJet, HP 2673, or None	
Printer Locale	Central	Central or Local (see following information)	
Printer Setting	Roman-8	Roman-8 or ISO (see following information)	
End Case Report[5]	Yes	Yes or No	

1. This item is dependent on the chosen Configuration Set (Global Switch dependent).
2. If the configuration is set to a 4 hour or 9 hour database, data will be stored at a 12 second resolution.
3. **Cardiac Output Time:** Calculation made using all the values that correspond to the last C.O. measurement. **Current Time:** Calculation made using the “newest data”.
4. No data samples will be stored while alarms are suspended if No is selected.
5. This item only applies for the ACMS or if the selected Unit Type (Configuration Set) is OR.

NOTE On the ACMS, the hospital name can be entered as patient data by pressing Trend/Calcs → **Hospital Name**. A maximum of 38 characters can be entered using the Handheld Keypad (Philips M1106C)

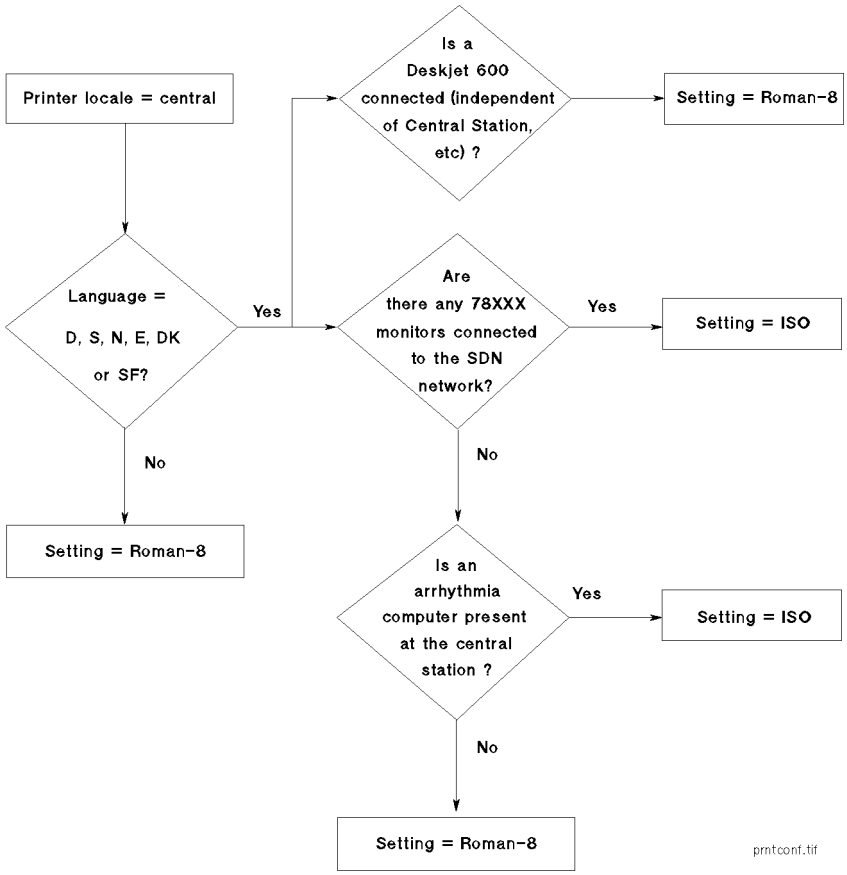
Printer Setting Configuration

When selecting the correct configuration for item *Printer Setting*

(Roman-8 or ISO), the following User Default Value must be chosen depending on the configuration of item *Printer Locale* (Local or Central):

Table 23 Printer Setting Configuration

Languages	Printer Locale set to: Local	Printer Locale set to: Central
German (D)	Roman-8	See figure below
Swedish (S)	Roman-8	See figure below
Norwegian (N)	Roman-8	See figure below
Spanish (E)	Roman-8	See figure below
Danish (DK)	Roman-8	See figure below
Finnish (SF)	Roman-8	See figure below
Other languages	Roman-8	Roman-8



If the CMS is configured to ISO, then the printer itself must be set to the required local language. If the local language of the CMS and/or Central

Station is Danish, the central printer must be set to *Norwegian ISO*.

NOTE For Vital Signs (table trends) configuration, the configurable item *Column interval* is Configuration Set dependent.

To access the Vital Signs configuration information press:

Trend/Calcs → **Vitals Config**.

Table 24 Vital Signs (Table Trends)

Item Name	Factory Default Values	User Default Values	User Configuration
24 or 48 hour database[1]			
Column interval	1 hr (Graph time span = 8 hrs)	1 min (Graph = 1 hr) 5 min (Graph = 1 hr) 15 min (Graph = 2 hrs) 1 hr (Graph = 8 hrs) 2 hrs (Graph = 16 hrs) 3 hrs (Graph = 24 hrs)	
4 or 9 hour database			
Column interval	5 min (Graph time span = 1 hr)	1 min (Graph = 1 hr) 5 min (Graph = 1 hr) 15 min (Graph = 4 hrs) 1 hr (Graph = 4 hrs) 2 hrs (Graph = 4 hrs)[2]	

1. The ACMS System has a 24 hour database.
2. This choice available with 9 hour database only.

To access the Graph Groups information press:

Trend/Calcs → **Graph Groups** .

Table 25 Changing the parameters within a Graph Group

Step	Action	Comment
1	Use *Graph Group*	to select the graph group you wish to configure.
2	Use *Position*	to select the parameter within the group that you wish to configure.
3	Use *Parameter*	to assign a parameter to the selected position within the graph group.

Table 26 Graph Groups

Item Name	Factory Default Values	User Default Values	User Configuration
Graph Group	1	1, 2, 3, 4, or 5	
Position	1	1, 2, or 3	
Parameter	Group 1: HR, ABP, PAP Group 2: HR, ABP, CVP Group 3: HR, ABP, Events Group 4: HR, PAP, C.O. Group 5: HR, NBP, RESP	any parameter	
Suffix	S/D/M[1], M[2], or H/L/A[3]	S/D/M, S/D, S, D, M, H/L/A, H/L, H, L or A	

1. S/D/M default for the following labels: ABP, PAP, IUP, ART, Ao, UAP, NBP, P_1-P_8.
2. M default for the following labels: CVP, LAP, ICP, RAP, UVP.
3. *H/L/A* default for label LI (Light Intensity of SvO_2)

To access the Reports Content information press:

Trend/Calcs → **Reports Content**.

Table 27 Reports Content

Item Name	Factory Default Values	User Default Values	User Configuration
Report Item	1	1, 2, 3, 4, or 5	
Report Type	Report 1: Vitals Report 2: Calc Report 3: Graph Report 4: Blank Report 5: Blank	Vitals, Graph, Calc, Blood, Blank	
Report Duration	Report 1: 8 hrs Report 2: 8 hrs Report 3: 8 hrs	**24/48 hr database:** 1, 2, 8, 16, 24 hrs **4/9 hr database:** 1, 2, 8, 16 hrs for Table/ Calc reports and 1, 4 hrs for Graphs reports	
Contents	Report 1: 1 hr intervals Report 2: Hemo Report 3: Group 1	**Table:** 1, 5, 15 min, and 1, 2, 3 hr intervals[1] **Graphs:** Group 1-5 **Calc:** Hemo, Oxy, Vent	

1. Intervals are dependent on report duration (to prevent extremely long reports):
   For 1 hr duration: 1 min, 5 min, 15 min, 1 hr intervals allowed.
   For 2 hrs duration: 5 min, 15 min, 1 hr, 2 hr intervals allowed.
   For 8 hrs duration: 5 min, 15 min, 1 hr, 2 hr intervals allowed.
   For 16 hrs duration: 15 min, 1 hr, 2 hr intervals allowed.
   For 24 hrs duration: 15 min, 1 hr, 2 hr, 3 hr intervals allowed.

To access the Reports Schedule information press:

Trend/Calcs → **Reports Schedule**.

Table 28 Reports Schedule

Item Name	Factory Default Values	User Default Values	User Configuration
Start hour	07	any hour	
Start minute	00	any minute	
Report frequency (hr)	24	any hour	
Report frequency (min)[1]	00	any minute	
On/Off schedule	Off	On or Off	

1. If **Report Frequency (hr)** is set to 24, **Report frequency (min)** is not adjustable.

Neonatal Event Review Default Table

NOTE Neonatal Event Review is not available on the ACMS To access the Neonatal Event Review information press:

Alarms/Volume → **Event Config** .

Item Name	Factory Default Values	User Default Values	User Configuration
(HR) Brady Event Settings			
Trigger Mode	Brady Alarm	Brady Alarm or User Def	
Trig Threshold	80 bpm[1, 2]		
Trigger Time:	3 sec.[1, 2]		
SpO_2 Desaturation Event Settings			
Trigger Mode	Desat (ICU) Low Alarm (OR)	Desat, Low Alarm, User Def or Off (ICU) Low Alarm, User Def or Off (OR)	
Trig Threshold	80%[1, 3]		
Trigger Time	20 sec[1, 3]		
Global Event Settings			
Pre/Post Time	-2/2	-1/+3 or -2/+2	

1. If Trigger Mode set to “UserDef”.
2. If the trigger mode is set to Brady Alarm, the Brady items must be changed in the HR Setup task window.
3. If the trigger mode is set to SpO2 Desat or Low Alarm, theSpO2 items must be changed in the SpO2 Setup task window.

oxyCRG Default Table

To access the oxyCRG information press:

Monitor Setup → **oxyCRG** .

Item Name	Factory Default Values	User Default Values	User Configuration
Oxygen Channel[1]	SpO_2	SpO_2 or $tcpO_2$	
Recorder Speed	2 cm/min	1, 2, or 3 cm/min	

1. You can select between SpO2 or tcpO2 as the source for the oxygen channel in the display and recorder.
NOTE: not from external devices using VueLink.

NOTE oxyCRG recordings can only run with the M1116B plug-in-recorder. No oxyCRG recordings will be given at the M1116A, M1117A or central station.

Configuration Sets

Global Switches

To access the Configuration Set information press:

Monitor Setup → **Config Sets**.

To access the Global Switches information press:

Monitor Setup → **Global Switches**.

Note

- The line frequency is the same for all configuration sets.
- **Pressing Factory Defaults only restores the factory default value for Line Frequency. The factory defaults for Patient Category and Unit Type are not restored.**
- Changing the Global Switches settings will cause the system to perform a cold-start; making the new Global Switches settings active.

Item Name	Factory Default Values Standard / Anesthesia / Neonatal	User Default Values	User Configuration
Configuration Set 1 (Active Configuration Set)			
Patient Category	Adult / Adult / Neo	Adult, Neonate or Pedi	
Unit Type[1]	ICU	OR or ICU	
Line Frequency[2]	60Hz	50Hz or 60Hz	
Configuration Set 2			
Patient Category	Adult / Adult / Neo	Adult, Neonate or Pedi	
Unit Type[1]	OR	OR or ICU	
Line Frequency[2]	60Hz	50Hz or 60Hz	
Configuration Set 3			
Patient Category	Neo / Pedi / Pedi	Adult, Neonate or Pedi	
Unit Type[1]	ICU	OR or ICU	
Line Frequency[2]	60Hz	50Hz or 60Hz	
Configuration Set 4			
Patient Category	Neo / Neo / Pedi	Adult, Neonate or Pedi	
Unit Type[1]	OR	OR or ICU	
Line Frequency[2]	60Hz	50Hz or 60Hz	

1. CMS and NCMS only.
2. The Line Frequency belongs to Global Switches, but is not dependent on the Configuration Set. Refer to the notes below.

CAUTION Ensure that the Line Frequency is set correctly for the country option ordered; since the ECG Notch Filter is set according to the selected line frequency. The factory default is 60Hz for all units.

Parameter Settings

Parameter Settings Transfer

The Parameter Settings Transfer is described in Volume 1 of the *User's Reference Manual*.

NOTE	The Parameter Settings Transfer configuration is performed in **Service Mode**.

To access the Parameter Settings Transfer information press:

Monitor Setup → **Global Switches**. Then select the **Settings Transf** item.

The Factory Default for the Parameter Settings Transfer is **No**.

Restoring Parameter Settings Transfer factory defaults.

There are three ways to restore the factory defaults for Parameter Settings Transfer **In Service Mode**:

- Press: Monitor Setup → **Global Switches**.

  Select **Settings Transf**

  Press: **Factory Defaults** → Confirm to store settings.
- Change Operating Modes.
- Change Configuration Sets.

Heart Rate (HR) / Pulse Default Table

To access the Heart Rate (HR) / Pulse information press:

Module Setup → **Heart Rate (HR/Pulse)**.

Item Name	Factory Default Values	User Default Values	User Configuration
Alarm Parameter	HR	HR or PULSE (see Note below)	
PULSE Source	PRESS 1 (Adult)	All available PULSE sources	
	PLETH (Neo/Ped)		
BradyLimit Diff	40 (Ped)	0 to (Low Limit - 20)	
	20 (Neo)	0 to (Low Limit - 50)	
Low Alarm Limit	50 (Adult)	15 to (High Limit - 5)[1]	
	100 (Neo/Ped)	15 to (High Limit - 5)[1]	
BradyTrig Time	3s (Neo) 5s (Ped)	0, 1, 2, 3, 4 or 5s	
High Alarm Limit	120 (Adult)	(Low Limit + 5) to 250	
	200 (Neo/Ped)	(Low Limit + 5) to 300	
Display Range	30 - 250 (Adult)	30 - 150, 30 - 190, 30 - 250,	
	30 - 300 (Neo/Ped)	50 - 210, 50 - 270, 30 - 300	
HR Alarms ON/OFF	Enabled	Enabled or Disabled (see Note below)	
Pulse at Startup	On	On or Off	

1. Only when the Alarm Parameter is Heart Rate (HR) If the Alarm Parameter is PULSE, then the Low Alarm Limit User Defaults can be set as follows: 30 to (High Limit - 5) (For Adult, Pediatric and Neonatal).

Note **French language CMSs only**

If conforming to French standards the following configuration settings are required:

- The Alarm Parameter is always fixed to HR and cannot be changed to PULSE.
- The Low Alarm Limit for HR cannot be lower than 30 bpm.
- The Brady Limit cannot be lower than 30 bpm for both pediatric and neonatal patients.
- HR Alarms ON/OFF must be set to Disabled for SDN networked environments and Enabled for non-SDN networked environments.

Note

HR Alarms ON/OFF

If the item HR Alarms ON/OFF is set to *Disabled* and *HR* is selected as the alarming parameter:

- HR Alarms **cannot** be switched OFF in Monitoring Mode.
- The softkey **`On/Off Alarms`** in the HR/PULSE Adjust Alarms task window is inactive.

If the item HR Alarms ON/OFF is set to *Disabled* and *PULSE* is selected as the alarming parameter:

- HR Alarms **can** be switched OFF in Monitoring Mode.

ECG Default Table

To access the ECG information press: Module Setup → ECG.

Table 29 ECG Defaults without EASI™ 12-Lead Option

Item Name	Factory Default Values	User Default Values	User Configuration
Active ECG Channels	Ch1 & Ch2 (Adult) Ch1 (Neo/Ped)	Ch1, Ch1 & Ch2 or Ch1 to Ch3	
Lead on Channel1	II	Any	
Lead on Channel2	V	Any	
Bandwidth Ch1[1]	Monitor (ICU) Filter (OR)	Filter, Diag or Monitor	
Bandwidth Ch2[1]	Monitor (ICU) Filter (OR)	Filter, Diag or Monitor	
Bandwidth Ch3[1]	Monitor (ICU) Filter (OR)	Filter, Diag or Monitor	
ECG Trigger Mode	Auto	Auto or Manual	
Fallback Mode[2]	On	On or Off	
Auto Filter[3]	Off (ICU) On (OR)	On or Off	
Auto Gain Mode[4]	AutoAdj	AutoAdj, AutoSize, Gain x1, Gain x2	
Paced Mode	Off	On or Off	

1. During ST Segment monitoring, the CMS automatically adjusts the low end of the bandwidth to 0.05 Hz. There is no change to the high end of the bandwidth.
2. Fallback for ECG Leads: if Fallback is On and ECG Channel One goes into INOP for more than 10 seconds, the second ECG lead becomes Channel One for the Heart Rate detection.
3. Automatic switch to Filter Bandwidth as long as ESU ongoing.
4. AutoAdj: Automatic gain/offset adjust.
   AutoSize: Only wave amplitude adjusted automatically. No offset adjust (AC coupling).
   Gain x1: Amplitude set at Gain x1. No offset adjust (AC coupling).
   Gain x2: Amplitude set at Gain x2. No offset adjust (AC coupling).
   Refer to the ECG/RESP Chapter in Volume 2 of the *User's Reference Manual*.

ECG Defaults with EASI™ 12-Lead Option

Item Name	Factory Default Values	User Default Values	User Configuration
Lead Placement	EASI	Standard or EASI	
Active ECG Channels	Ch1 to Ch3	Ch1, Ch1 & Ch2 or Ch1 to Ch3	
Lead on Channel1	II	Any	
Lead on Channel2	V2	Any	
Lead on Channel3	V5	Any	
Bandwidth[1]	Monitor (ICU) Filter (OR)	Filter, Diag or Monitor	
ECG Trigger Mode	Auto	Auto or Manual	
Auto Filter[2]	Off (ICU) On (OR)	On or Off	
Auto Gain Mode[3]	AutoAdj	AutoAdj, AutoSize, Gain x1, Gain x2	
Paced Mode	Off	On or Off	
12-Lead Sequence	Normal	Normal or Cabrera	
12-Lead Window	Normal	Normal or Large	
Auto Reports	NoReport	NoReport, OnAlarm or All	
Alarm Type	ST	ST or ST&HR	
Schedule Interval	2.0 hours	0.5 hours to 48 hours[4]	
Reports by Alarm	Printer	Printer or Recorder	
Scheduled Reports	Printer	Printer or Recorder	
12-leads on SDN	On	On or Off	
Size of 12-lead	Gain x2	Auto Adjust, Gain of Channel 1, Gain x1 or Gain x2	
Grid On Printout	5mm	1mm or 5mm	

1. During ST Segment monitoring, the CMS automatically adjusts the low end of the bandwidth to 0.05 Hz. There is no change to the high end of the bandwidth.
2. Automatic switch to Filter Bandwidth as long as ESU ongoing.
3. AutoAdj: Automatic gain/offset adjust.
   AutoSize: Only wave amplitude adjusted automatically. No offset adjust (AC coupling).
   Gain x1: Amplitude set at Gain x1. No offset adjust (AC coupling).
   Gain x2: Amplitude set at Gain x2. No offset adjust (AC coupling).
   Refer to the ECG/RESP Chapter in Volume 2 of the *User's Reference Manual*.
4. In half hour steps.

Respiration Default Table

To access the Respiration information press:

Module Setup → **Resp** .

Item Name	Factory Default Values	User Default Values	User Configuration
Trigger Mode	Auto	Auto or Manual	
Apnea Time	20 sec	Between 10s & 40s in steps of 5s	
RESP Low Limit	8 rpm (Adult/Pedi) 30 rpm (Neo)	Between 0 rpm & 95 rpm (Adult/Pedi)[1] Between 0 rpm & 145rpm(Neo)[1]	
RESP High Limit	30 rpm (Adult/Pedi) 100 rpm (Neo)	Between 10 rpm & 100 rpm (Adult/Pedi)[1] Between 30 rpm & 150 rpm (Neo)[1]	
Units Display	Off	On or Off	
Resp at Startup	On	On or Off	

1. Range steps:
   Ranges from 0 up to 19 rpm in steps of 1 rpm.
   Ranges from 20 up to 150 rpm in steps of 5 rpm.

ST Default Table

To access the ST information press:

Monitoring Procedures → **ST Analysis**.

Item Name	Factory Default Values	User Default Values	User Configuration
ST Monitoring	ST1-ST2	Off, ST1, ST1-ST2 or ST1-ST3	
ST Low Alarm Limit (all channels)	-1.0 mm	-9.8 to 9.8 mm	
ST High Alarm Limit (all channels)	1.0 mm	-9.8 to 9.8 mm	
Set ST Using (reference point)[1]	J+60 ms	ST Point, J+60 ms or J+80 ms	
Isoelectric Point	-80 ms	-460 to 460 ms	
ST Point[2]	108 ms	-380 to 460 ms	
J Point[1]	48 ms	-460 to 380 ms	
Units Display	On	On or Off	
Trend Range	±2 mm	±1 mm, ±2 mm or ±5 mm	
ST Off if SDN	No[3]	Yes or No	

1. If the Set ST Using (ST Measurement point) is configured to ST Point, the J Point configuration is not shown in the configuration task window.
2. If the Set ST Using (ST Measurement point) is configured to J Point, J + 60 or J + 80, the ST Point configuration is not shown in the configuration task window.
3. If YES, switches off the ST parameter if the monitor is connected to SDN.

Pressure Default Tables

To access the Pressure information press:

Module Setup → the required Pressure softkey.

NOTE There are four different factory defaults for pressure. Pressures (1), (2) and (3) have differing factory default values. Pressures (4) to (6) share common factory default values. The respective factory defaults are shown in the table, preceded by the pressure numbers.

General Pressure Defaults

Item Name	Factory Default Values	User Default Values	User Configuration
Scale	(1) 120mmHg (Adult)	6, 10, 18, 30, 60, 120, 180, 240mmHg, or Optimum	
	(1) 60mmHg (Neo/Ped)	6, 10, 18, 30, 60, 120, 180, 240mmHg or Optimum	
	(2) 30mmHg		
	(3) 30mmHg		
	(4-6) 30mmHg		
Label	(1) ABP	P1, ABP, ART, Ao, PAP, CVP, RAP, LAP, ICP, UAP or UVP	
	(2) PAP	Any Label	
	(3) CVP	Any Label	
	(4 - 6) P4 - P6	Any Label	
Alarm Parameter	(1) Systolic	Systolic, Diastolic or Mean	
	(2) Diastolic	Systolic, Diastolic or Mean	
	(3) Mean	Systolic, Diastolic or Mean	
	(4 - 6) Mean	Systolic, Diastolic or Mean	
Respiration Suppression[1]	On	On or Off	
Pressure Filter	12Hz	12Hz or 40Hz	
Display Mean[2]	On	On or Off	
Pressure Units	mmHg	mmHg or kPa	
Units Display	Off	On or Off	
Artifact Suppr.	60 sec	Off, 30 sec, 60 sec, 90 sec	

1. For information regarding the Respiration Suppression algorithm, refer to *Appendix A* in this manual.
2. When *Display Mean* is configured to On, only the mean pressure will be displayed. *Display Mean* will override any label selected in Monitoring Mode (even if the pressure signal is a pulsatile). *Display Mean* can only be set to On for the following labels: ICP, LAP, RAP, CVP and UVP.

Pressure Default Alarm Limits

Item Name	Factory Default Values	User Default Values	User Configuration
Alarm Limits (1) SYS/DIA (MEAN) - in mmHg			
Low Alarm Limit (Adult)	90/50 (70)	-40 to +360	
High Alarm Limit (Adult)	160/90 (110)	-40 to +360	
Low Alarm Limit (Neo/Ped)	55/20 (35)	-40 to +360	
High Alarm Limit (Neo/Ped)	90/60 (70)	-40 to +360	
Alarm Limits (2) SYS/DIA (MEAN) - in mmHg			
Low Alarm Limit (Adult)	10/0 (0)	-40 to +360	
High Alarm Limit (Adult)	35/16 (20)	-40 to +360	
Low Alarm Limit (Neo/Ped)	24/-4 (12)	-40 to +360	
High Alarm Limit (Neo/Ped)	60/4 (26)	-40 to +360	
Alarm Limits (3) SYS/DIA (MEAN) - in mmHg			
Low Alarm Limit (Adult)	6/-4 (0)	-40 to +360	
High Alarm Limit (Adult)	14/6 (10)	-40 to +360	
Low Alarm Limit (Neo/Ped)	2/-4 (0)	-40 to +360	
High Alarm Limit (Neo/Ped)	10/2 (4)	-40 to +360	
Alarm Limits (4-6) SYS/DIA (MEAN) - in mmHg			
Low Alarm Limit (Adult)	6/-4 (0)	-40 to +360	
High Alarm Limit (Adult)	14/6 (10)	-40 to +360	
Low Alarm Limit (Neo/Ped)	2/-4 (0)	-40 to +360	
High Alarm Limit (Neo/Ped)	10/2 (4)	-40 to +360	

Note Different user default ranges may be set for pressures (4), (5) and (6), but all these pressures share the same set of Factory Defaults.

The Alarm Limits can be adjusted in the specified range in 2mmHg steps up to 30mmHg, and in steps of 5mmHg over 30mmHg.

NBP Default Table

To access the NBP information press: Module Setup → NBP.

Item Name	Factory Default Values	User Default Values	User Configuration
Mode	Auto (Adult, Ped) Manual (Neo)	Auto or Manual	
Repetition in auto mode	15 mins (ICU) 5 mins (OR)	1, 2, 2.5, 3, 5, 10, 15, 20, 30, 45, 60 or 120 mins	
Alarm Parameter	Sys	Sys, Dia or Mean	
Pressure Units	mmHg	mmHg or kPa	
NBP Done Tone	No (ICU), Yes (OR)	Yes or No	
Start Time	Synchronized	NotSynchron or Synchronized	
Venipunc. Press[1]	60mmHg (Adult)	20 - 120mmHg[2]	
	40mmHg (Ped)	20 - 80mmHg[2]	
	30mmHg (Neo)	20 - 50mmHg[2]	
Alarm Limits Alarm limits can be adjusted within the specified ranges in the following steps: Up to 30mmHg, in 2mmHg steps. Over 30mmHg, in 5mmHg steps.			
Low Systolic	90mmHg (Adult)	30 - 265mmHg	
	70mmHg (Ped)	30 - 175mmHg	
	40mmHg (Neo)[3]	30 - 125mmHg	
High Systolic	160mmHg (Adult)	35 - 270mmHg	
	120mmHg (Ped)	35 - 180mmHg	
	90mmHg (Neo)[3]	35 - 130mmHg	
Low Diastolic	50mmHg (Adult)	10 - 240mmHg	
	40mmHg (Ped)	10 - 145mmHg	
	20mmHg (Neo)[3]	10 - 95mmHg	
High Diastolic	90mmHg (Adult)	18 - 240mmHg	
	70mmHg (Ped)	18 - 150mmHg	
	60mmHg (Neo)[3]	18 - 100mmHg	

Item Name	Factory Default Values	User Default Values	User Configuration
Low Mean	60mmHg (Adult)	20 - 250mmHg	
	50mmHg (Ped)	20 - 155mmHg	
	24mmHg (Neo)[3]	20 - 115mmHg	
High Mean	110mmHg (Adult)	28 - 255mmHg	
	90mmHg (Ped)	28 - 160mmHg	
	70mmHg (Neo)[3]	28 - 120mmHg	

1. Only available for modules with the venous puncture symbol on the front.
2. Venous puncture pressure can be adjusted within the specified ranges in 5mmHg steps.
3. Neonatal alarm limits only available with the Philips M1008B Module - check for availability of this module.

SpO_2/SpO_2 2/Pleth Default Table

To access the SpO_2/Pleth information press:

Module Setup → **SpO_2/Pleth** or **$SpO_2$2/Pleth**.

Item Name	Factory Default Values	User Default Values	User Configuration
Low Alarm Limit	90 (Adult/Pedi), 85 (Neo)	50 to 99 in steps of 1 (Adult) 30 to 99 in steps of 1 (Pedi/Neo)	
High Alarm Limit	100 (Adult/Pedi), 95 (Neo)	51 to 100 in steps of 1 (Adult) 31 to 100 in steps of 1 (Pedi/Neo)	
Averaging Time[1]	Medium (10s)	Fast (5s), Medium (10s) or Slow (20s)	
Tone Modulation[1]	Enhanced	Enhanced[2], Standard[3] or Off	
NBP Alarm Suppr	On	On or Off	
Units Display	Off	On or Off	
Low Alarm Trigger Time [1]	10 sec. (Adult/Pedi & Neo)	0-30 in steps of 1	
High Alarm Trigger Time[1]	10 sec. (Adult/Pedi & Neo)	0-30 in steps of 1	
Wave Amplitude	SpO_2, SQI	SpO_2,SQI or Perfusion	
PERF Indicator in SpO_2 Task Window	Off	On or Off[4]	
DESAT Limit[5]	80 (Adult/Pedi & Neo)	50 to Low Limit in steps of 1 (Adult) 30 to Low Limit in steps of 1 (Pedi/ Neo)	
DESAT TrigTime[5]	20 sec.	0 to 30 in steps of 1	
Avg/TrigTimeAdj	Disabled	Enabled or Disabled	

1. The second SpO_2 module cannot be configured separately for these items. Joint configuration is assigned through the first SpO_2 module.
2. Enhanced tone modulation gives better audible differentiation for small changes of SpO_2 level.
3. Standard tone modulation is identical to NELLCOR® implementation.
4. If this item is configured to Off, PERF will not be trended.

5. Not active in OR mode.

SvO_2 Default Table

To access the SvO_2 information press: Module Setup → **$Sv0_2$** .

Item Name	Factory Default Values	User Default Values	User Configuration
Low Alarm Limit	60	10 to 99 in steps of 1	
High Alarm Limit	80	11 to 100 in steps of 1	
Trend Scale	60...100	30...100, 40...100, 50...100 60...100, 70...100 or 80...100	
Time Scale	1 hr	1, 2 or 4 hrs	
Light Intensity Trend	On	On or Off	
SpO_2 display	On	On or Off	
Units Display	Off	On or Off	

CO_2 Default Table

To access the CO_2 information press: Module Setup → CO_2.

NOTE The CO_2 algorithm makes an adjustment to the measurement according to altitude. An adjustment for altitude must therefore be entered under Global Switches in **Service Mode** before using the CO_2 Module.

Item Name	Factory Default Values	User Default Values	User Configuration
N_2O Correction	Off (ICU), On (OR)	On or Off	
Unit	mmHg	mmHg or kPa	
$IMCO_2$ High Limit	4mmHg (0.5kPa)	2mmHg to 20mmHg[1] 0.3kPa to 3.0kPa	
AWRR High Limit	30 rpm (Adult/Ped)	10 rpm to 100 rpm[2]	
	100 rpm (Neo)	30 rpm to 150 rpm[2]	
AWRR Low Limit	8 rpm (Adult/Ped)	0 rpm to 95 rpm[2]	
	30 rpm (Neo)	0 rpm to 145 rpm[2]	
Apnea time	20 sec	10 sec to 40 sec[3]	
$ETCO_2$ High Limit	50mmHg (6.5kPa)	20mmHg to 100mmHg[4] 2.0kPa to 14kPa	
$ETCO_2$ Low Limit	30mmHg (4.0 kPa)	10mmHg to 95mmHg[4] 1.0kPa to 13kPa	
Units Display	Off	On or Off	

1. In steps of 1mmHg.
2. Range steps:
   Ranges from 0 up to 19 rpm in steps of 1 rpm.
   Ranges from 20 up to 150 rpm in steps of 5 rpm.
3. In steps of 5sec.
4. Up to 40mmHg in 2mmHg steps. Over 40mmHg in 5mmHg steps.
   Up to 5.0kPa in 0.2kPa steps. Over 5.0kPa in 0.5kPa steps.

$tcpO_2/tcpCO_2$ Default Table

To access the $tcpO_2/tcpCO_2$ information press:

Module Setup → **$tcpO_2/tcpCO_2$**.

Note Patient Safety

- If the item **Heat Swichtoff** is configured to **No** (factory default), the transducer will remain at operating temperature on the patient, therefore avoiding interruption of $tcpO_2/tcpCO_2$ monitoring.
- *If the item **Site Timer Off** is set to **Allowed**, the user can disable the Site Timer so that the “Change Site” reminder message is not displayed. If the monitored site is not changed, the transducer will remain at operating temperature on the patient.

Indefinite transducer heating on the patient can cause skin irritation, reddening or blistering. For patient safety reasons, ensure that **Heat Switchoff and Site Timer Off** are configured in accordance with the standard medical procedures of the hospital.

NOTE The $tcpO_2/tcpCO_2$ algorithm makes an adjustment to the measurement according to altitude. An adjustment for altitude must therefore be entered under Global Switches in **Service Mode** before using the $tcpO_2/tcpCO_2$ Module.

Item Name	Factory Default Values	User Default Values	User Configuration
$tcpO_2$ Low Alarm Limit	50mmHg (6.5kPa)	10mmHg to 95mmHg	
$tcpO_2$High Alarm Limit	80mmHg (10.5kPa)	20mmHg to 300mmHg (2.5kPa to 40kPa)	
$tcpCO_2$ Low Alarm Limit	30mmHg (4.0kPa)	10mmHg to 95mmHg	
		1.0kPa to 12.5kPa (in steps of 0.5kPa).	
$tcpCO_2$High Alarm Limit	50mmHg (6.5kPa)	20mmHg to 150mmHg (2.5kPa to 20kPa)	
Transducer Temp.	43°C	37°C, 41°C to 45°C	
Site Time	4hrs	Off, 0.5hrs to 3hrs, or 4hrs to 8hrs	
Site Timer Off[1]	Not Allowed	Allowed or Not allowed	
Heat Switchoff[2]	No	Yes or No	
CO_2 Correction[3]	On (with metabolism factor of 8mmHg)	On or Off	
Metabolism Factor[3]	8mmHg (0.6kPa)	0mmHg to 12mmHg (0.0kPa to 1.6kPa)	
Unit (of measurement)	mmHg	mmHg or kPa	
Units Display	Off	On or Off	

1. Site Time and Site Timer Off settings are interactive. If Site Timer Off is set to *Not Allowed*, the Off selection is not available under Site Time. If Site time is set to Off and Site Timer Off is changed from *Allowed* to *Not allowed*, the Site Time setting is automatically changed to 8hrs. **Take note of the patient safety statement above.**
2. Automatic switch-off of the transducer heater, interrupting $tcpO_2$/$tcpCO_2$ monitoring, when the Site Time period elapses. **Take note of the patient safety statement above.**
3. Refer to *Transcutaneous pO_2 and pCO_2 Monitoring in Neonatology* (Philips p/n 5962-9992E).

FIO_2 Default Table

To access the FIO_2 information press: Module Setup → FiO_2.

Item Name	Factory Default Values	User Default Values	User Configuration
Low alarm Limit	0.20 (ICU), 0.25 (OR)	0.18 to 0.90 (0.18, 0.20, then upwards in steps of 0.05).	
High Alarm Limit	0.80	0.25 to 1.10 (in steps of 0.05)	

Airway Gases

The configuration of the Anesthetic Gas Module is described in a dedicated chapter of the M1026A Anesthetic Gas Module Service Manual.

Ventilator Configuration Default Table

To access the Ventilator information press:

Airway Gases/Ventilation → VENTILTR.

NOTE Also refer to the RS232 Configuration Default Table for details on ventilator output interface configuration.

7800/7810 Ohmeda Ventilator Configuration Values

Item Name	Factory Default Values	User Default Values	User Configuration
Ventilator Type	Ohmeda 7800	Ohmeda 7800, or Ohmeda 7810	
Ventilator Alarms	Accepted	Accepted/Ignored	
Units Display	Off	Off or On	
Numeric 1	TV	TV, MV, PMax, Pplat, Pmin sIE 1:, O_2, RRaw, or <Off>	
Numeric 2	RRaw	TV, MV, PMax, Pplat, Pmin sIE 1:, O_2, RRaw, or <Off>	
Numeric 3	O_2	TV, MV, PMax, Pplat, Pmin sIE 1:, O_2, RRaw, or <Off>	
Numeric 4	MV	TV, MV, PMax, Pplat, Pmin sIE 1:, O_2, RRaw, or <Off>	
Numeric 5	Pmax	TV, MV, PMax, Pplat, Pmin sIE 1:, O_2, RRaw, or <Off>	
Numeric 6	Pplat	TV, MV, PMax, Pplat, Pmin sIE 1:, O_2, RRaw, or <Off>	
Numeric 7	Pmin	TV, MV, PMax, Pplat, Pmin sIE 1:, O_2, RRaw, or <Off>	
Numeric 8	sIE 1:	TV, MV, PMax, Pplat, Pmin sIE 1:, O_2, RRaw, or <Off>	
Numeric 9	<Off>	TV, MV, PMax, Pplat, Pmin sIE 1:, O_2, RRaw, or <Off>	

7900 Ohmeda Ventilator Configuration Values

Item Name	Factory Default Values	User Default Values	User Configuration
Wave 1	Paw	Paw, AWF or AWV[1], <Off>	
Wave 2	AWF	Paw, AWF, AWV or <Off>	
Units Display	Off	Off or On	
Numeric 1	TV	TV[1], RRaw, MV, Pmax, Pmin, Pplat, Pmean, $cktO_2$, sTV[1], sRRaw, SI:E 1:, sPEEP, sPin, sPmax, COMP or <Off>	
Numeric 2	MV	TV, RRaw, MV, Pmax, Pmin, Pplat, Pmean, $cktO_2$, sTV, sRRaw, SI:E 1:, sPEEP, sPin, sPmax, COMP or <Off>	
Numeric 3	RRaw	TV, RRaw, MV, Pmax, Pmin, Pplat, Pmean, $cktO_2$, sTV, sRRaw, SI:E 1:, sPEEP, sPin, sPmax, COMP or <Off>	
Numeric 4	Pmax	TV, RRaw, MV, Pmax, Pmin, Pplat, Pmean, $cktO_2$, sTV, sRRaw, SI:E 1:, sPEEP, sPin, sPmax, COMP or <Off>	
Numeric 5	Pmin	TV, RRaw, MV, Pmax, Pmin, Pplat, Pmean, $cktO_2$, sTV, sRRaw, SI:E 1:, sPEEP, sPin, sPmax, COMP or <Off>	
Numeric 6	Pplat	TV, RRaw, MV, Pmax, Pmin, Pplat, Pmean, $cktO_2$, sTV, sRRaw, SI:E 1:, sPEEP, sPin, sPmax, COMP or <Off>	
Numeric 7	Pmean	TV, RRaw, MV, Pmax, Pmin, Pplat, Pmean, $cktO_2$, sTV, sRRaw, SI:E 1:, sPEEP, sPin, sPmax, COMP or <Off>	
Numeric 8	$cktO_2$	TV, RRaw, MV, Pmax, Pmin, Pplat, Pmean, $cktO_2$, sTV, sRRaw, SI:E 1:, sPEEP, sPin, sPmax, COMP or <Off>	
Numeric 9	COMP	TV, RRaw, MV, Pmax, Pmin, Pplat, Pmean, $cktO_2$, sTV, sRRaw, SI:E 1:, sPEEP, sPin, sPmax, COMP or <Off>	

1. The AWV wave and the TV and sTV numerics are displayed in litres for adults and pediatrics and millilitres for neonates.

Cardiac Output Default Table

To access the Cardiac Output information press:

Procedures → C.O. .

To access the Tblood information press:

Module Setup → Tblood .

Item Name	Factory Default Values	User Default Values	User Configuration
C.O.			
INJ LOW TEMP[1]	Off	On or Off	
Units Display	Off	On or Off	
ITBV/EVLW View	Indexed	Absolute or Indexed	
Homologation	Dependent on Geography	U.S. or Non-U.S. (Fixed at factory)	
Tblood			
Low Alarm Limit	36°C	17°C - 42.9°C[2]	
High Alarm Limit	39°C	17.5°C - 43°C[1]	
Display Range	35°C - 43°C	35°C - 43°C or 17°C - 43°C	
Units Display	Off	On or Off	

1. Right heart thermodilution method only.
2. From 17°C to 35°C in steps of 0.5°, from 35°C to 42.9°C in steps of 0.1°.

Continuous Cardiac Output Default Table

To access the Cardiac Output information press:

Procedures → **CCO** .

Item Name	Factory Default Values	User Default Values	User Configuration
CCO			
Low Alarm Limit	Adult: 4.0 Pedi: 2.6 Neo: 0.3	0.1 - 24.5	
High Alarm Limit	Adult: 8.5 Pedi: 3.7 Neo: 1.3	0.2 - 25.0	
Units Display	Off	On or Off	
CCI View	General	General or TW Only	
SVR View	Absolute	Absolute or Indexed	
Auto-Calibr.	Yes	Yes or No	

EEG Default Table

To access the EEG information press:

Module Setup , then the EEG softkey.

Item Name	Factory Default	User Default Values	User Configuration
Scale	100µV[1]	20, 30, 50, 100, 200, 300, 500, 1000[1]	
	±50µV[2]	±10, ±15, ±25, ±50, ±100, ±150, ±250, ±500 [2]	
Show Gridlines	No	Yes, No	
Low Filter	0.5 Hz	0.5, 1, 2, 5 Hz	
High Filter	30 Hz	15, 30, 50 Hz	
Numeric 1	TP	TP, SEF, MDF, PPF, DELTA, THETA, ALPHA, BETA, Off	
Numeric 2	SEF	TP, SEF, MDF, PPF, DELTA, THETA, ALPHA, BETA, Off	
SEF Threshold	90%	50 to 99%	
Impedance Limit	5kΩ	1 to 30 kΩ	
Units Display	Off	On, Off	
Printout Configuration			
Print-out every...	24h	5, 10, 15, 30 min 1, 2, 3, 4, 6, 8, 12, 24 hours	
Print-out at	7:00,...	[3]	
Scheduled Print-outs	Off	On, Off	
CSA Configuration			
CSA Epoch A	2sec.	2, 4, 10, 30, 60, 120 sec.	
CSA Epoch B	30sec.	2, 4, 10, 30, 60, 120 sec.	
CSA Epoch C	120sec.	2, 4, 10, 30, 60, 120 sec.	
CSA Smoothing	On	On, Off	
CSA on Display			
Frequency Scale	30 Hz	7.5, 15, 30 Hz	
CSA Epoch	Epoch A	Epoch A, Epoch B, Epoch C	
CSA on Printout			
CSA Epoch	Epoch C	Epoch A, Epoch B, Epoch C	

1. If Show Gridlines is “No”.
2. If Show Gridlines is “Yes”.
3. Depends on interval chosen in “Print-out every...”.

Configuring Electrode Montages

Press the **Montage Config** softkey in the main **EEG Configuration** Task Window.

To change an electrode placement montage, you must first press:

Select Montage

or use the up and down arrow keys to select the montage you wish to modify. You can now use:

Select Item and **Change Content**

to change the selected item as usual.

Changing the Items in an Electrode Montage

For each electrode (columns EEG1+, EEG1-, EEG2+,EEG2-) you can select one of the following electrode positions: Fp1, Fp2, F7, F3, FZ, F4, F8, A1, T3, C3, CZ, C4, T4, A2, T5, P3, PZ, P4, T6, O1, O2.

The lead label is automatically generated, and can be edited.

NOTE It is possible for channel 1 and channel 2 to have a common "-" electrode position. All other electrode positions MUST be different.

	Name	EEG1+	EEG1-	Label1	EEG2+	EEG2-	Label2
Factory Default Values	Mont.A	Fp1	T3	Fp1-T3	Fp2	T4	Fp2-T4
User Default Values							
Factory Default Values	Mont.B	O1	T3	O1-T3	O2	T4	O2-T4
User Default Values							
Factory Default Values	Mont.C	F3	C3	F3-C3	F4	C4	F4-C4
User Default Values							
Factory Default Values	Mont.D	C3	P3	C3-P3	C4	P4	C4-P4
User Default Values							
Factory Default Values	Mont.E	Fp1	T5	Fp1-T5	Fp2	T6	Fp2-T6
User Default Values							

Temperature Default Table

To access the Temperature information press:

Module Setup

followed by the required Temperature softkey.

Item Name	Factory Default Values	User Default Values	User Configuration
Label	T1 - T4	T1 - T4, Trect, Tcore, Tskin, Tesop, Tnaso, Tart or Tven	
Low Alarm Limit	36°C	-1°C - 44.9°C[1]	
High Alarm Limit	39°C	-0.5°C - 45°C[1]	
Temp Range	35 to 43°C	-1 to 45°C, 11 to 45°C or 35 to 43°C	
Units Display	Off	On or Off	

1. From -1°C to 35°C in steps of 0.5°, from 35°C to 45°C in steps of 0.1°.

NOTE Notes Temperature Defaults are not Configuration Set dependent (they are identical for all Configuration Sets).

VueLink Module Default Table

To access the M1032A VueLink Module information press:

Module Setup

followed by the required VueLink softkey.

Item Name	Factory Default Values	User Default Values	User Configuration
Device Alarms	Accepted(ICU) Ignored (OR)	Ignored or Accepted	
Prefer'd Module	<Unspec>	<Unspec>, Ventiltr, Gas-Alzr, GCS, An.Mach, Aux.Plus, 7, 8, or 9	

Refer to *M1032A VueLink Module Handbook* for more details on the configuration of the VueLink Module.

BIS Default Table

To access the BIS information press:

Module Setup , BIS

Item Name	Factory Default Values	User Default Values	User Configuration
Scale	100 µV	50, 100, 200, 500 µV	
Filters	On	On, Off	
Notch Filter	On	On, Off	
High Pass Filter	2 Hz	0.25, 1, 2 Hz	
Low Pass Filter	70 Hz	30, 50, 70 Hz, Off	
Impedance Chk	Cont	Cont, Off	
Smoothing Rate	30 s	15, 30s	
Display SR	On	On, Off	
Display Units	Off	On, Off	
Low Alarm Limit	20	0 - 99	
High Alarm Limt	70	1 - 100	

Differential Temperature Default Table

To access the Differential Temperature information press:

Module Setup

followed by the required Differential Temperature softkey.

Item Name	Factory Default Values	User Default Values	User Configuration
Parameter	On	On or Off	
First TEMP	TEMP1	TEMP1 - TEMP4 or Tblood	
Second TEMP	**DIFF 1:** TEMP2	TEMP1 - TEMP4 or Tblood	
	DIFF 2: TEMP 3	TEMP1 - TEMP4 or Tblood	
Display Range	0 - 12	0 - 4, 0 - 12 or 0 - 40	
Units Display	Off	On or Off	

NOTE Notes Temperature Defaults are not Configuration Set dependent (they are identical for all Configuration Sets).

CPP Default Table

To access the CPP information press: Module Setup → CPP.

Item Name	Factory Default Values	User Default Values	User Configuration
Arterial Source	ABP	ABP, ART or Ao	
Units Display	Off	On or Off	
Alarm Limits: Alarm limits can be adjusted within the specified range in steps of 2mmHg.			
Low Alarm Limit	50mmHg (Adult)	-30 to +268mmHg	
	40mmHg (Ped)	-30 to +268mmHg	
	30mmHg (Neo)	-30 to +268mmHg	
High Alarm Limit	130mmHg (Adult)	-28 to +270mmHg	
	100mmHg (Ped)	-28 to +270mmHg	
	90mmHg (Neo)	-28 to +270mmHg	

Recorder Default Table

The following table gives the factory default values and the values that can be selected as user defaults for Recording functions. A separate table for marking up User Configuration follows the **Recorder Strip Overlap Choices** tables.

To access the Delayed & Alarm information press:

Monitor Setup → **Recordng Setup** → **Delayed & Alarm**.

To access the Realtime Waves (Modes A, B or C) information press:

Monitor Setup → **Recordng Setup**

followed by the required Mode's softkey.

Note

- Mode B is affected by the Vital Signs/Blood Recording configuration. When the "Key Label" item in Other Recording Configuration Settings is configured to "VS/Blood", Mode B will be assigned to Vital Signs/Blood recording (only displayed in Monitoring Mode).
- Mode C is affected by the availability of oxyCRG. When oxyCRG is available, Mode C will be assigned to oxyCRG Recording.

Item Name	Factory Default Values				User Default Values
	Delayed & Alarm	Realtime Waves			
		Mode A	Mode B	Mode C[1]	
Channel #1	ECG CH1	ECG CH1	ECG CH1	ECG CH1	(See Note B)
Channel #2	ECG CH2	ECG CH2	ECG CH2	PRESS 1	(See Note B)
Channel #3	PRESS 1	PRESS 1[2]	PRESS 1[2]	PRESS 2[2]	(See Note B)
Channel #4	PRESS 2	PRESS 2[2]	PRESS 2[2]	PRESS 3[2]	(See Note B)
Channels #5-8	BLANK	BLANK	BLANK	BLANK	(see Note B)
Speed	25mm/s	25mm/s	25mm/s	25mm/s	50, 25, 12.5, 6.25, 2.5mm/s and 6, 3, 2.5, 2.0 and 1.0cm/min.[3] (and 1, 0.3cm/min) [2]
Recorder	Plug-in 2 Channel	Plug-in 2 Channel	Plug-in 2 Channel	Plug-in 2 Channel	Plug-in 2 Channel, Central (x Channel), 4ch BS-1[2], 4ch BS-2[4], 2ch BS[2] (See Note C)
Overlap	#1	#1	#1	#1	#1 to #4 (see following tables on **Recorder Strip Overlap Choices**)
Key Label	—	Mode A	Mode B	Mode C	**Realtime only:** Mode A/B/C, Baseline, 3 ECG, 4 Press, Slow Spd, Standard, IABP, Code, Airway or Wedge
Delay Time	15 sec.	—	—	—	**Delayed only:** 10 or 15 sec.
Run Time	20 sec.	Cont	Cont	Cont	**Delayed waves:** 10, 15, 20, 25, or 30 sec. **Realtime waves:** 15 sec or continuous
No Alarm Recording message	Yes	—	—	—	**Delayed only:** Yes or No
Alarm Recording On/Off	Disabled	—	—	—	Disabled or Enabled
Alarm Recording Type[5]	Standard	—	—	—	oxyCRG or Standard (See Note A)

1. For the Neonatal CMS model 48(S), the factory default is OxyCRG recording.
2. Only available if HDLC Interface is fitted.
3. 2.0 and 1.0cm/min. available with M1116B only.
4. Only available if 78574 is connected to SDN Interface.
5. The selection between “Standard” and “oxyCRG” can only be made when oxyCRG is available on your monitor.

Note

A Alarm Recording Type

- oxyCRG recordings can only run with the M1116B plug-in-recorder. No oxyCRG recordings will be given at the M1116A, M1117A or central station.

  oxyCRG recordings are not available for the ACMS.

- Standard alarm recordings will still be given at central station if Alarm Recording Type is set to **oxyCRG**.

B Wave Assignment User Default Values

Realtime Waves

- Any wave can be assigned to any position of 1 to 8.
- The number of realtime waves that can be recorded at one time depends upon the number of waves that the current recorder supports.

Delayed Waves

The number of delayed waves depends on the model type:

Model 44(S) 64(S) 84(S)	4 Waves
Model 56(S)76(S)	6 Waves
Model 88(S) 68(S) 48(S)	8 Waves

C Recorder Labels

Plug-in (2ch)	2 Channel Plug-in Recorder (M1116A/B).
4ch BS-1 or 4ch BS-2	4 Channel Bedside Recorder (M1117A).
2ch BS	2 Channel Bedside Recorder (78574).
CENTRAL (x ch)	Number of channels depends on the recorder connected to the Central Station.

Recorder Strip Overlap Choices

Table 30 Overlap Choices on 2 Channel Recorder Module (M1116A/B)

Overlap	Sector 1	Sector 2
#1	20 mm Wave 1	20 mm Wave 2
#2	40 mm Waves 1-2	
#3	20 mm Wave 1	20 mm Wave 2-3
#4	40 mm Waves 1-3	

Note

Recorder Default Grids

All waves are printed on a 5mm x 5mm grid except the following:

Pressure wave: 4mm x 5mm grid

CRG wave: 2.5mm x 5mm grid

The CRG wave is not available for the ACMS.

Table 31 Overlap Choices on 4 Channel Bedside Recorder (M1117A)

Overlap	Sector 1	Sector 2	Sector 3	Sector 4
#1	25 mm Wave 1	25 mm Wave 2	25 mm Wave 3	25 mm Wave 4
#2	25 mm Wave 1	75 mm Wave 2-4		
#3	25 mm Wave 1	25 mm Wave 2	50 mm Wave 3-4	
#4	50 mm Wave 1	50 mm Wave 2-4		

Table 32 Realtime Waves User Configuration

Item Name	User Configuration			
	Delayed & Alarm	Realtime Waves		
		Mode A	Mode B	Mode C
Channel #1				
Channel #2				
Channel #3				
Channel #4				
Channel #5				
Channel #6				
Channel #7				
Channel #8				
Speed				
Recorder				
Overlap				
Key Label				
Delay Time				
Run Time				
No Alarm Recording message				
Alarm Recording On/Off				
Alarm Recording Type[1]				

1. Not available for the ACMS.

Procedure Recording Table

The Procedure Recording item allows you to select the recorder that will produce cardiac output, wedge and ST measurement curve recordings.

To access the Procedure Recording information press:

Monitor Setup → **Recordng Setup** → **Procedur Recordng**.

Item Name	Factory Default Values	User Default Values	User Configuration
Recorder	Plug-in (2 ch)	4CH BS-1, 4CH BS-2, Plug-in (2Ch) or CENTRAL (x ch)	

Note

Recorder Labels

Plug-in (2ch)- 2 Channel Plug-in Recorder (M1116A/B).

4ch BS-1 or 4ch BS-2	4 Channel Bedside Recorder (M1117A).
2ch BS	2 Channel Bedside Recorder (78574).
CENTRAL (x ch)	Number of channels depends on the recorder connected to the Central Station.

Other Recording Configuration Settings

To access other recording configuration settings, press:

Monitor Setup → **Recordng Setup** → **Other Config**.

Item Name	Factory Default Values	User Default Values	User Configuration
Record Key	Preset Recordng	Select or Preset	
Key Label	Mode B	Mode B or VS/Blood	
NBP Start	No	Yes or No	
Rec Includes	Vitals	Vitals, Blood, or Both	
Blood Start	No	Yes or No	
Rec Includes	Blood	Vitals, Blood or Both	
Timer Start	No	Yes or No	
Repeat Time[1]	5 min.	1, 2, 2.5, 3, 5, 10, 15, 20, 30, 45, 60, or 120 min.	
Rec Includes	Vitals	Vitals, Blood or Both	

1. Repeat Time can only be configured if Start Rec On is set to Timer.

Configurable Alarm Recordings Default Table

To access the Configurable Alarm Recording information press:

Monitor Setup → **Recordng Setup** → **AlarmRec On/Off**.

The table lists all existing features. Availability depends upon the model or option selected.

Item Name	Factory Default Values	User Default Values	User Configuration
ECG	Red/Yellow	Red/Yellow, Off or Red	
ST	Yellow	Yellow or Off	
PULSE	Yellow	Yellow or Off	
PRESS 1 ABP	Red/Yellow	Red/Yellow, Off or Red	
PRESS 2 PAP	Red/Yellow	Red/Yellow, Off or Red	
PRESS 3 CVP	Red/Yellow	Red/Yellow, Off or Red	
PRESS 4 P4	Red/Yellow	Red/Yellow, Off or Red	
PRESS 5 P5	Red/Yellow	Red/Yellow, Off or Red	
PRESS 6 P6	Red/Yellow	Red/Yellow, Off or Red	
CPP	Yellow	Yellow or Off	
NBP	Yellow	Yellow or Off	
C.O.	Yellow	Yellow or Off	
CCO	Yellow	Yellow or Off	
SpO_2	Yellow	Red/Yellow, Off or Red[1]	
SpO_2 2	Yellow	Red/Yellow, Off or Red[2]	
SvO_2	Yellow	Yellow or Off	
CO_2	Red/Yellow	Red/Yellow, Off or Red	
FIO_2	Red/Yellow	Red/Yellow, Off or Red	
RESP	Red/Yellow	Red/Yellow, Off or Red	
$tcpO_2$	Yellow	Yellow or Off	
$tcpCO_2$	Yellow	Yellow or Off	
BIS	Yellow	Yellow or Off	

Item Name	Factory Default Values	User Default Values	User Configuration
VentIf[2]	Red/Yellow	Red/Yellow, Off or Red	
Airwy O_2[2]	Red/Yellow	Red/Yellow, Off or Red	
Airwy CO_2[2]	Red/Yellow	Red/Yellow, Off or Red	
Airwy N_2O[2]	Yellow	Yellow or Off	
Airwy AGT[2]	Yellow	Yellow or Off	
TEMP 1 - 4	Yellow	Yellow or Off	
VueLink A	Red/Yellow	Red/Yellow, Off or Red	
VueLink B	Red/Yellow	Red/Yellow, Off or Red	

1. For CMS or NCMS applications, we recommend Red/Yellow or Red for optimum notification about Desat alarms.
2. Only available for the ACMS.

Blood Analysis Default Table

To access the Blood Analysis configuration information press:

Monitor Setup → **Blood Analysis**.

Item Name	Factory Default Values	User Default Values	User Configuration
Auto Transmit	Disabled	0, 5, 10, 15, 30, 60 min., Disabled	
Out Of Range[1]	Enabled	Enabled, Disabled	
Range/Unit Def.[2]	Units	Units, Ranges, Blank	
BA-IF Warning[3]	Enabled	Enabled, Disabled	
Setup Window[4]	Manual	Auto, Manual	
Sample Type	Unspec	Unspec, Last[5]	
Patient Temp.	Off	Off, Last[5]	
O_2* Input	Cleared[6]	Cleared[6], Last[5], Disabled[7]	
Field1 Input	Cleared	Cleared[6], Last[5], Disabled	
Field2 Input	Cleared	Cleared[6], Last[5], Disabled	
Field3 Input	Cleared	Cleared[6], Last[5], Disabled	
Patient ID[8]	Requestd	Optional, Requestd, Required	
Operator ID[9]	Requestd	Disabled, Requestd, Required	
Op. ID Input	Cleared	Cleared[6], Last[5]	
Op. ID Hidden	No	Yes, No	
Op. ID # Digits	Any	Any, 2, 3, 4, 5, 6	
Operator ID Defaults[10]:			
Operator ID1	-	0 - 999,999	
Operator ID2	-	0 - 999,999	
. . .	. . .	. . .	
Operator ID15	-	0 - 999,999	

1. If “Enabled” is selected, the module indicates values which are outside the reference range and passes this information to other system components.
2. Selects whether Units, Ranges or nothing appears as default next to the measurement values in the Results window.
3. If “Enabled” is selected, a warning will appear on the CMS when the connection to the Blood Analysis Interface is interrupted.
4. If “Auto” is selected, the Setup Window automatically appears when a cartridge is inserted.
5. If “Last” is selected, the Setup screen starts with the settings made from the last setup change.
6. If “Cleared “ is selected, the Setup screen starts with these settings blank.
7. If O_2* Input is “Disabled”, O_2 selection does not appear in the Setup screen.
8. If Patient ID is “Optional”, the user can leave it empty without consequences. If “Requestd” is selected, the user will be asked for a Patient ID but can continue by pressing Confirm . If “Required” is selected, the User must enter a Patient ID in order to view and transmit the results.
9. If Operator ID is “Disabled”, the **Select Oper ID** key does not appear in the Setup screen. If “Requestd” is selected, the user will be asked for an Operator ID but can continue by pressing Confirm . If “Required” is selected, the User must enter an Operator ID in order to view and transmit the results.
10. When an Operator ID is left blank there will be no entry in the selection screen for this ID number. Setting all IDs to blank will mean that there are no entries in the selection screen at all and therefore the monitor will go directly into the “Manual Entry” screen.

Output Interfaces

RS232 Configuration Table

To access the RS232 Configuration information press:

Monitor Setup → **RS232** .

First RS232 Card

Item Name	Factory Default Values	User Default Values	User Configuration
Port #2	Computer Off	Computer Off, Computer On, AGM, VENT or Touch.	
Port #1	Computer On	Computer Off, Computer On, AGM, VENT, Touch or Mouse.	
Baudrate #2[1]	9600	9600 or 19200	
Baudrate #1[1]	19200	9600, 19200 or 38400	
TX/RX #2[1]	High/Low	High/Low or Low/High	
TX/RX #1[1]	Low/High	High/Low or Low/High	

1. The configuration of these items is only valid when the port is assigned to “Computer On”. These items are automatically configured when the port is assigned to “Computer Off”, or additionally to “AGM” or “VENT” for.the ACMS

Second RS232 Card

Item Name	Factory Default Values	User Default Values	User Configuration
Port #4	AGM	Computer Off, Computer On, AGM, VENT or Touch	
Port #3	VENT	Computer Off, Computer On, AGM, VENT, Touch or Mouse.	
Baudrate #4[1]	9600	9600 or 19200	
Baudrate #3[1]	19200	9600, 19200 or 38400	
TX/RX #4[1]	High/Low	High/Low or Low/High	
TX/RX #3[1]	Low/High	High/Low or Low/High	

1. The configuration of these items is only valid when the port is assigned to “Computer On”. These items are automatically configured when the port is assigned to “Computer Off”, or additionally to “AGM” or “VENT” for the ACMS.

Note

RS232 printer connections can only be made using Port #2 when the port is configured to “Computer Off”. Port #1, Port #3 and Port #4 do not support RS232 printer connections.

For the CMS and NCMS:

- AGM (Anesthetic Gas Module) and VENT (Ventilator) connections are not supported.

For the ACMS:

- AGM (Anesthetic Gas Module) and Personal Computer connections are not supported on the same RS232 Card.
- VENT (Ventilator) and Personal Computer connections are not supported on the same RS232 Card.

Supported RS-232 Configurations

In configuration mode, selections to set up a touch screen or mouse/ trackball are available under RS-232 configurations.

These are labelled: `Touch` and `Mouse`

NOTE Once Touch or Mouse configurations are made, the CMS Monitor must be restarted in order to activate the new configuration settings.

NOTE Printer is only supported at Port #2 (Upper port of first RS-232 card configured to *Computer Off*).

Multiple AGM, VENT, Touch or Mouse configurations are not supported.

Mouse or Trackball is not supported on upper ports (#2 and #4).

The following table shows the supported RS-232 configuration settings of one card:

Upper Port	Lower Port	Upper Port	Lower Port
Computer Off	Computer On	Touch	Computer On
	Touch		Computer Off
	Mouse		Mouse
	AGM		AGM
	VENT		VENT
AGM	Computer Off	VENT	Computer Off
	Touch		Touch
	Mouse		Mouse
	VENT		AGM

Analog Output Default Table

Note

- Analog Output configuration is performed in **Monitoring Mode**.
- There is no softkey to return settings to factory default values.

To access the Analog Output information press:

Monitor Setup → Analog Output.

Table 33 CMS and NCMS Analog Outputs

Item Name	Factory Default Values	User Default Values	User Configuration
ASSIGNMENTS			
Channel #1	ECG CH1	Absolute wave	Parameters can be assigned as follows: **Absolute Waves:** ECG, PRESS, CO_2 **Scale Waves:** Any parameter. **Numerics:** Any parameter.
Channel #2	ECG CH2	Absolute wave	
Channel #3	PRESS 1	Absolute wave	
Channel #4	PRESS 2	Absolute wave	
Channel #5	PRESS 3	Absolute wave	
Channel #6	PRESS 4	Absolute wave	
Channel #7	CO_2	Absolute wave	
Channel #8	PLETH	Scale wave	
Absolute Waves - GAIN (adjust with up and down arrow keys)			
ECG	1.00 mV / 1V	0.01 to 9.99 mV / 1 V	
PRESS, CO_2	100 mmHg / 1 V	1 to 999 mmHg / 1V	
Absolute Waves - OFFSET (adjust with left and right arrow keys)			
ECG	0.00 mV / 0V	-9.99 to 9.99 mV = 0 V	
PRESS, CO_2	0 mmHg / 0 V	-999 to 999 mmHg = 0 V	
Scaled Waves - GAIN (adjust with up and down arrow keys)			
ECG, PRESS, C.O., PLETH, CO_2, RESP, EEG CH1, EEG CH2, BIS-EEG, VUELINK	1.00	0.01 to 8.00	
Scaled Waves - OFFSET (adjust with left and right arrow keys)			

Item Name	Factory Default Values	User Default Values	User Configuration
ECG, PRESS, C.O., PLETH, CO_2, RESP, EEG CH1, EEG CH2, BIS-EEG, VUELINK	0 V	-5.0 V to +5.0 V	
Numerics - GAIN (adjust with up and down arrow keys)			
HR /btb HR / PULSE	100 bpm / 1 V	-999 to +999 bpm / 1 V	
PRESS, CPP, NBP	100 mmHg / 1 V	-999 to +999 mmHg / 1 V	
PAWP	10 mmHg / 1 V	-99.9 to +99.9 mmHg / 1 V	
C.O.	100 l/min / 1 V	-99.9 to +99.9 l/min / 1 V	
ITBV	100 ml / 1 V	-999 to +999 ml / 1 V	
ITBVI	100 ml/m^2 / 1 V	-999 to +999 ml/m^2 / 1 V	
EVLW	100 ml / 1 V	-999 to +999 ml / 1 V	
EVLWI	100 ml/Kg / 1 V	-999 to +999 ml/Kg / 1 V	
CCO	100 ml/min / 1 V	-999 to +999 ml/min / 1 V	
CCI	100 ml/min/m^2 / 1 V	-999 to +999 ml/min/m^2 / 1 V	
SVR	100 DS/cm^5 / 1 V	-999 to +999 DS/cm^5 / 1 V	
SVRI	100 DSm^2/cm^5 / 1 V	-999 to +999 DSm^2/cm^5 / 1 V	
SpO_2	100% / 1 V	-999 to +999% / 1 V	
SpO_2 2	100% / 1 V	-999 to +999% / 1 V	
SvO_2	100% / 1 V	-999 to +999% / 1 V	
CO_2 ($ETCO_2$ and $IMCO_2$)	100 mmHg / 1 V	-999 to +999 mmHg / 1 V	
RESP, AWRR	50 rpm / 1 V	-999 to +999 rpm / 1 V	
FIO_2	1.00 / 1 V	-9.99 to +9.99 / 1 V	
$tcpO_2$/$tcpCO_2$	100 mmHg / 1 V	-999.9 to +999.9 mmHg / 1 V	
EEG1.1, EEG2.1[1]	100nW / 1 V	-999 to +999 nW / 1 V	
EEG1.2, EEG2.2[1]	100Hz / 1 V	-999 to +999 Hz / 1 V	
Tblood, TEMP	10.0°C / 1 V	-99.9 to +99.9 °C / 1 V	
DIFF TEMP	5.0°C / 1 V	-99.9 to +99.9 °C / 1 V	
ST	1.0 mm / 1 V	-99.9 to +99.9 mm / 1 V	
VueLink[2]	1.0 mm / 1 V	-999 to +999 mm / 1 V	
PERF	100 / 1 V	-99.9 to +99.9 mm / 1 V	
Numerics - OFFSET (adjust with left and right arrow keys)			

Item Name	Factory Default Values	User Default Values	User Configuration
HR / btb HR / PULSE	0 bpm = 0 V	-999 to +999 bpm = 0 V	
PRESS, NBP, CPP	0 mmHg = 0 V	-999 to +999 mmHg = 0 V	
CO_2	0 mmHg = 0 V	-999 to +999 mmHg = 0 V	
PAWP	0 mmHg = 0 V	-99.9 to +99.9 mmHg = 0 V	
C.O.	0 l/min = 0 V	-99.9 to +99.9 l/min = 0 V	
ITBV	0 ml = 0 V	-999 to +999 ml = 0 V	
ITBVI	0 ml/m^2 = 0 V	-999 to +999 ml/m^2 = 0 V	
EVLW	0 ml = 0 V	-999 to +999 ml = 0 V	
EVLWI	0 ml/Kg = 0 V	-999 to +999 ml/Kg = 0 V	
CCO	0 ml/min = 0 V	-999 to +999 ml/min = 0 V	
CCI	0 $ml/min/m^2$ = 0 V	-999 to +999 $ml/min/m^2$ = 0 V	
SVR	0 DS/cm^5 = 0 V	-999 to +999 DS/cm^5 = 0 V	
SVRI	0 DSm^2/cm^5 = 0 V	-999 to +999 DSm^2/cm^5 = 0 V	
SpO_2	0% = 0 V	-999 to +999% = 0 V	
FIO_2	0.00 = 0 V	-9.99 to +9.99 = 0 V	
$tcpO_2/tcpCO_2$	0 mmHg = 0 V	-999.9 to +999.9 mmHg = 0 V	
RESP, AWRR	0 rpm = 0 V	-999 to +999 rpm = 0 V	
EEG1.1, EEG2.1[1]	0nW = 0 V	-999 to +999 nW = 0 V	
EEG1.2, EEG2.2[1]	0Hz = 0 V	-999 to +999 Hz = 0 V	
Tblood, TEMP,	20.0°C = 0 V	-99.9 to +99.9 °C = 0 V	
DIFF TEMP	0.0°C = 0 V	-99.9 to +99.9 °C = 0 V	
ST	0.0 mm = 0 V	-99.9 to +99.9 mm = 0 V	
VueLink[2]	0.0 mm = 0 V	-999 to +999 mm = 0 V	
PERF	0 = 0V	-99.9 to +99.9 mm = 0 V	

1. The actual unit depends on the selected montage and numeric.
2. The actual unit depends on the selected VueLink driver and numeric.

Table 34 ACMS Analog Outputs

Item Name	Factory Default Values	User Default Values	User Configuration
ASSIGNMENTS			
Channel #1	ECG CH1 - Absolute wave	Parameters can be assigned as follows: **Absolute Waves:** ECG, PRESS, CO_2 AG CO_2, AG Agent, AG O_2 **Scale Waves:** Any parameter. **Numerics:** Any parameter.	
Channel #2	ECG CH2 - Absolute wave		
Channel #3	PRESS 1 - Absolute wave		
Channel #4	PRESS 2 - Absolute wave		
Channel #5	PRESS 3 - Absolute wave		
Channel #6	PRESS 4 - Absolute wave		
Channel #7	CO_2 - Absolute wave		
Channel #8	PLETH - Scale wave		
Absolute Waves - GAIN (adjust with up and down arrow keys)			
ECG	1.00 mV / 1V	0.01 to 9.99 mV / 1 V	
PRESS, CO_2, AG CO_2 AG Agent, AG O_2	100 mmHg / 1 V	1 to 999 mmHg / 1V	
Absolute Waves - OFFSET (adjust with left and right arrow keys)			
ECG	0.00 mV / 0V	-9.99 to 9.99 mV = 0 V	
PRESS, CO_2, AG CO_2 AG Agent, AG O_2	0 mmHg / 0 V	-999 to 999 mmHg = 0 V	
Scaled Waves - GAIN (adjust with up and down arrow keys)			
ECG, PRESS, C.O., PLETH, CO_2, AG CO_2 AG Agent, AG O_2 RESP, EEG CH1, EEG CH2, VUELINK	1.00	0.01 to 8.00	
Scaled Waves - OFFSET (adjust with left and right arrow keys)			
ECG, PRESS, C.O., PLETH, CO_2, AG CO_2 AG Agent, AG O_2 RESP, EEG CH1, EEG CH2, VUELINK	0 V	-5.0 V to +5.0 V	
Numerics - GAIN (adjust with up and down arrow keys)			

Item Name	Factory Default Values	User Default Values	User Configuration
HR /btb HR / PULSE	100 bpm / 1 V	-999 to +999 bpm / 1 V	
PRESS, CPP, NBP	100 mmHg / 1 V	-999 to +999 mmHg / 1 V	
PAWP	10 mmHg / 1 V	-99.9 to +99.9 mmHg / 1 V	
C.O.	100 l/min / 1 V	-99.9 to +99.9 l/min / 1 V	
SpO_2	100% / 1 V	-999 to +999% / 1 V	
SvO_2	100% / 1 V	-999 to +999% / 1 V	
CO_2 ($ETCO_2$ and $IMCO_2$)	100 mmHg / 1 V	-999 to +999 mmHg / 1 V	
RESP, AWRR	50 rpm / 1 V	-999 to +999 rpm / 1 V	
VENTNUM 1	100 L / 1 V	-999 to +999 L / 1 V	
VENTNUM 2	50 rpm / 1 V	-999 to +999 rpm / 1 V	
VENTNUM 3	100% / 1 V	-999 to +999% / 1 V	
VENTNUM 4	100 l/min / 1 V	-999 to +999 l/min / 1 V	
VENTNUM 5-7	100 cmH_2O / 1 V	-999 to +999 cmH_2O / 1 V	
VENTNUM 8	100 / 1 V	-999 to +999 / 1 V	
AG O_2 (etO_2 and inO_2)	100% / 1 V	-999 to +999% / 1 V	
AG CO_2 ($ETCO_2$ and $IMCO_2$)	100 mmHg / 1 V	-999 to +999 mmHg / 1 V	
AG N_2O (etN_2O and inN_2O)	100% / 1 V	-999 to +999% / 1 V	
AG etAGT	100% / 1 V	-999 to +999% / 1 V	
AG inAGT	100% / 1 V	-999 to +999% / 1 V	
AG AWRR	50 rpm / 1 V	-999 to +999 rpm / 1 V	
FIO_2	1.00 / 1 V	-9.99 to +9.99 / 1 V	
$tcpO_2$/$tcpCO_2$	100 mmHg / 1 V	-999.9 to +999.9 mmHg / 1 V	
EEG1.1, EEG2.1[1]	100nW / 1 V	-999 to +999 nW / 1 V	
EEG1.2, EEG2.2[1]	100Hz / 1 V	-999 to +999 Hz / 1 V	
Tblood, TEMP	10.0°C / 1 V	-99.9 to +99.9 °C / 1 V	
DIFF TEMP	5.0°C / 1 V	-99.9 to +99.9 °C / 1 V	
ST	1.0 mm / 1 V	-99.9 to +99.9 mm / 1 V	
VueLink[2]	1.0 mm / 1 V	-999 to +999 mm / 1 V	
PERF	100 / 1 V	-99.9 to +99.9 mm / 1 V	
Numerics - OFFSET (adjust with left and right arrow keys)			

Item Name	Factory Default Values	User Default Values	User Configuration
HR / btb HR / PULSE	0 bpm = 0 V	-999 to +999 bpm = 0 V	
PRESS, NBP, CPP	0 mmHg = 0 V	-999 to +999 mmHg = 0 V	
CO_2	0 mmHg = 0 V	-999 to +999 mmHg = 0 V	
PAWP	0 mmHg = 0 V	-99.9 to +99.9 mmHg = 0 V	
C.O.	0 l/min = 0 V	-99.9 to +99.9 l/min = 0 V	
SpO_2	0% = 0 V	-999 to +999% = 0 V	
FIO_2	0.00 = 0 V	-9.99 to +9.99 = 0 V	
VENTNUM 1	0 L = 0 V	-999 to +999 L = 0 V	
VENTNUM 2	0 rpm = 0 V	-999 to +999 rpm = 0 V	
VENTNUM 3	0% = 0 V	-999 to +999% = 0 V	
VENTNUM 4	0 l/min = 0 V	-999 to +999 l/min = 0 V	
VENTNUM 5-7	100 cmH_2O = 0 V	-999 to +999 cmH_2O = 0 V	
VENTNUM 8	0 = 0 V	-999 to +999 = 0 V	
AG O_2 (etO_2 and inO_2)	0% = 0 V	-999 to +999% = 0 V	
AG CO_2 ($ETCO_2$ and $IMCO_2$)	0 mmHg = 0 V	-999 to +999 mmHg = 0 V	
AG N_2O (etN_2O and inN_2O)	0% = 0 V	-999 to +999% = 0 V	
AG AGT (etAGT and inAGT)	0% = 0 V	-999 to +999% = 0 V	
AG AWRR	0 rpm = 0 V	-999 to +999 rpm = 0 V	
RESP, AWRR	0 rpm = 0 V	-999 to +999 rpm = 0 V	
EEG1.1, EEG2.1[1]	0nW = 0 V	-999 to +999 nW = 0 V	
EEG1.2, EEG2.2[1]	0Hz = 0 V	-999 to +999 Hz = 0 V	
Tblood, TEMP	20.0°C = 0 V	-99.9 to +99.9 °C = 0 V	
DIFF TEMP	0.0°C = 0 V	-99.9 to +99.9 °C = 0 V	
ST	0.0 mm = 0 V	-99.9 to +99.9 mm = 0 V	
VueLink[2]	0.0 mm = 0 V	-999 to +999 mm = 0 V	
PERF	0 = 0V	-99.9 to +99.9 mm = 0 V	

1. The actual unit depends on the selected montage and numeric.
2. The actual unit depends on the selected VueLink driver and numeric.

Analog Output Configuration

The System's Analog Output allows the user to adjust the **gain** (size) and **offset** (position) of each analog signal. When adjusting settings, press:

Confirm

in the Analog Out Task Window if you wish to retain your settings after a cold-start.

The ranges of user default values for Gain and Offset are more likely to be limited by the external equipment connected to the System than by the System's own limits.

4
Drug Calculator Configuration

Overview

This chapter primarily addresses nurses and doctors. Please provide a copy of this chapter to the nurse/doctor responsible for determining the drug calculator configuration.

The information in this chapter introduces the Philips standard drug configuration, and will help you determine the drug configuration for your CMS. The following topics are covered in this chapter:

- Description of the drug calculator.
- Worksheet for configuring drugs for a specific unit. This should be filled out by the clinical staff at the hospital.
- Directions for filling out the worksheet, with examples.
- Default drug configuration provided by Philips

Please use the Configuration Sign-off Sheet (Appendix B) to record who was responsible for your Drug Calculator Configuration.

Drug Calculator Features

The CMS supports a unique configuration of up to 24 drugs. Each drug can have its own:

- *Normal* values.
- Unknown result to be calculated.
- Titration table range.

A list of the Standard Drug Configuration provided by Philips can be found on page 120. You can modify the standard configuration of these drugs, or enter your own selection of drugs.

Configuring Drugs

Note

- The Handheld Keypad is required for Drug Calculator configuration.
- Drug Calculator configuration is accessed in Configuration Mode through:

  Trends/Calcs → **Drug Calc**

  From here, the configuration of existing drugs can be modified, deleted, and new drugs added.

  Your Philips Representative will enter the drug configuration during system installation.
- When a standard drug is deleted, it can not be recalled. If you wish to re-include the drug in the list after deletion, you are required to enter it as a new drug.

The Worksheet

A worksheet is included for your convenience (Appendix B). If you will be configuring several drugs, make photocopies of the worksheet before you start. For each new drug, complete a section in the worksheet. For each modification to the standard configuration, only the drug name and the changed information needs to be entered. The order of entries on the worksheet is not significant; drugs are listed alphabetically by the Drug Calculator. An example worksheet is shown in the following figure.

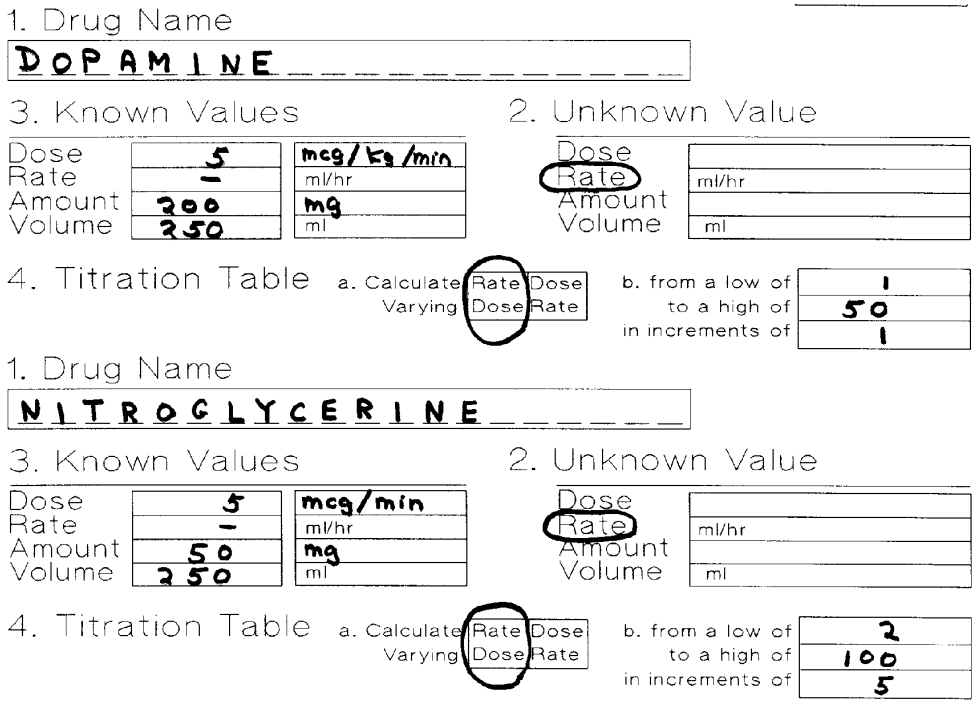


Figure 2 Example Configuration Worksheet

Drug Change Procedures and Filing in the Worksheet

1. Enter the *Drug Name*. The name can include up to 20 characters consisting of upper case letters (A - Z), numbers, periods, slashes (/), and dashes (-). Other characters, including lower case letters (a - z), cannot be used. To enter a slash (/), press the divide (÷) key on the keypad. To enter a dash (-), press the minus (-) key on the keypad.

2. Circle the *Unknown Value*, that is, the calculation result, at the **right** of the form. The choices are Dose, Rate, Amount, or Volume. If the item selected for the unknown value requires units, enter them also. The units for rate and volume are fixed at ml/hr and ml respectively, but you can select units for dose (refer to the *Dose Units* table) and amount (refer to the *Amount Units* table). For example, if you want to calculate the rate of the pump, choose “Rate” as the unknown. If instead, the drug will be used with a fixed rate of infusion, you may wish to select “Amount” as the unknown.

Table 35 Dose Units

ng/min	nanograms per minute
ng/kg/min	nanograms per kilogram per minute
ng/hr	nanograms per hour
ng/kg/hr	nanograms per kilogram per hour
mcg/min	micrograms per minute
mcg/kg/min	micrograms per kilograms per minute
mcg/hr	micrograms per hour
mcg/kg/hr	micrograms per kilogram per hour
mg/min	milligrams per minute
mg/kg/min	milligrams per kilograms per minute
mg/hr	milligrams per hour
mg/kg/hr	milligrams per kilogram per hour
g/min	grams per minute
g/kg/min	grams per kilograms per minute
g/hr	grams per hour
g/kg/hr	grams per kilogram per hour
mU/min	milliUnits per minute
mU/kg/min	milliUnits per kilograms per minute
mU/hr	milliUnits per hour
mU/kg/hr	milliUnits per kilogram per hour
U/min	Units per minute
U/kg/min	Units per kilograms per minute
U/hr	Units per hour
U/kg/hr	Units per kilogram per hour

Table 36 Amount Units

ng	nanograms
mcg	micrograms
mg	milligrams
g	grams
mU	milliUnits
U	Units

3. Enter the starting value for each of the three *Known Values*, that is, the values that will appear when the calculator is first called up for a particular drug. If units are required, you can select from the dose units and amount units tables above.

   The known values will be listed when the drug is first displayed. We recommend you choose values typically encountered for this drug in the your patient environment. Any changes made (either in *Value* or *Unknown*) will be displayed the next time the drug is selected. Once a patient is discharged, the values will return to the configured set.

4. Complete the *Titration Table* setup. The titration table enables you to determine the effect of adjusting Dose or Rate without re-entering the calculator. The table provides a display or report of a range of either Rate varying Dose or Dose varying Rate.

   a. Circle the table orientation that meets your needs.

      For example, a choice of “Calculate Rate Varying Dose” will provide a table where a range of doses is given as input and the calculated rate for each dose will be provided as output.

   b. Enter the high and low ends of the range, and the increment of the “Varying” parameter.

      For example, a table might range from 100 mcg/kg/min to 500 mcg/kg/min in increments of 10 mcg/kg/min. The units are implied by those chosen in the Dose field.

      The number of entries in the titration table depends on the range and increment. Up to 30 values will fit on one display, and 120 values on one report page.

Standard Drug Configuration

Table 37 Standard Drug Configuration|

Item Name	Drug Name				
	Aminophylline	Amrinone Lactate	Bretylium	Dobutamine	Dopamine
Unknown	Rate	Rate	Rate	Rate	Rate
Unknown Units	not applicable	not applicable	not applicable	not applicable	not applicable
Starting Dose	0.5	2.0	2.0	2.5	2.0
Dose Units	mg/kg/hr	mcg/kg/min	mg/min	mcg/kg/min	mcg/kg/min
Starting Rate	not applicable	not applicable	not applicable	not applicable	not applicable
Starting Amount	500	250	2	250	400
Amount Units	mg	mg	g	mg	mg
Starting Volume	500	250	500	250	250
Table Orientation	Rate varying Dose	Rate varying Dose	Rate varying Dose	Rate varying Dose	Rate varying Dose
Table Low	0.5	0.5	0.5	0.5	0.5
Table High	20	25	10	40	25
Table Increment	0.5	0.5	0.5	0.5	0.5

Table 38 Standard Drug Configuration (continued)

Item Name	Drug Name				
	Epinephrine	Heparin	Insulin	Isoproterenol	Levarterenol
Unknown	Rate	Rate	Rate	Rate	Rate
Unknown Units	not applicable	not applicable	not applicable	not applicable	not applicable
Starting Dose	0.01	1000	1	2	2
Dose Units	mcg/kg/min	U/hr	U/hr	mcg/min	mcg/min
Starting Rate	not applicable	not applicable	not applicable	not applicable	not applicable
Starting Amount	5	25000	100	2	4
Amount Units	mg	U	U	mg	mg
Starting Volume	250	500	100	500	500
Table Orientation	Rate varying Dose	Rate varying Dose	Rate varying Dose	Rate varying Dose	Rate varying Dose
Table Low	0.005	500	1	0.5	0.1
Table High	0.20	2500	20	10	12
Table Increment	0.005	50	1	0.5	0.1

Table 39 Standard Drug Configuration (continued)

Item Name	Drug Name				
	Lidocaine	Morphine Sulphate	Nitroglycerine	Nitroprusside	Procainamide
Unknown	Rate	Rate	Rate	Rate	Rate
Unknown Units	not applicable	not applicable	not applicable	not applicable	not applicable
Starting Dose	2.0	0.5	5.0	0.5	2.0
Dose Units	mg/min	mg/hr	mcg/min	mcg/kg/min	mg/min
Starting Rate	not applicable	not applicable	not applicable	not applicable	not applicable
Starting Amount	2000	50	50	50	2000
Amount Units	mg	mg	mg	mg	mg
Starting Volume	250	50	250	250	250
Table Orientation	Rate varying Dose	Rate varying Dose	Rate varying Dose	Rate varying Dose	Rate varying Dose
Table Low	0.5	0.5	5	0.5	0.5
Table High	4	50	250	20	4
Table Increment	0.5	0.5	5	0.5	0.5

Table 40 Standard Drug Configuration (continued)

Item Name	Drug Name			
	.Any Dose, mcg/kg/min	.Any Dose, mcg/min	.Any Dose, mg/hr	.Any Dose, mg/kg/hr
Unknown	Rate	Rate	Rate	Rate
Unknown Units	not applicable	not applicable	not applicable	not applicable
Starting Dose	2	0.5	20	0.5
Dose Units	mcg/kg/min	mcg/min	mg/hr	mg/kg/hr
Starting Rate	not applicable	not applicable	not applicable	not applicable
Starting Amount	200	2	250	500
Amount Units	mg	mg	mg	mg
Starting Volume	250	250	250	250
Table Orientation	Rate varying Dose	Rate varying Dose	Rate varying Dose	Rate varying Dose
Table Low	1	0.5	0.5	0.5
Table High	50	20	20	20
Table Increment	1	0.5	0.5	0.5

A
Selecting the Correct Patient Category

Introduction

This Appendix helps the clinician understand how the choice of Patient Category affects parameters (in particular ECG and NBP).

Factory Default Values

Each System is configured in the factory with the **Factory Default Values**. The settings are collected together to form 4 Configuration Sets:

CMS Configuration Sets

Configuration Set 1 is for adult, Intensive Care Unit application.

Configuration Set 2 is for adult, Operating Room application.

Configuration Set 3 is for neonatal, Intensive Care Unit application.

Configuration Set 4 is for neonatal, Operating Room application.

ACMS Configuration Sets

Configuration Set 1 is for adult, Operating Room application.

Configuration Set 2 is for adult, Operating Room application.

Configuration Set 3 is for pediatric, Operating Room application.

Configuration Set 4 is for neonatal, Operating Room application.

NCMS Configuration Sets

Configuration Set 1 is for neonatal, Intensive Care Unit application.

Configuration Set 2 is for neonatal, Intensive Care Unit application.

Configuration Set 3 is for pediatric, Intensive Care Unit application.

Configuration Set 4 is for pediatric, Intensive Care Unit application.

Before beginning to monitor a new patient, the user should determine whether the current Patient Category (Adult, Pediatric or Neonate) meets the needs of the patient.

In most cases, the choice of category is determined by the patient's size and age, although there may be cases where a category chosen on this basis is not appropriate.

Changing the Patient Category

The patient category can be changed within a Configuration Set during normal monitoring. All the parameter settings and patient data management information is kept if the patient category is changed without changing Configuration Set. In Monitoring Mode, the key pressing sequence is as follows:

Monitor Setup → **Adult/Pedi/Neo** → **Change PatCateg**.

NOTE Depending on the patient category, the System processes patient signals using different algorithms. Value ranges and alarm limit ranges can be different for each patient category.

If the new alarm limits are no longer within range after you change patient category, the limits are adjusted to the closest possible values within the new range.

The table below outlines the differences between the patient categories for the affected parameters.

Parameter	What is different?	Patient Category		
		Adult	Pedi	Neo
NBP	Safety Values	Adult	Pedi	Neo
ECG	Algorithm[1]	Adult	Neo	Neo
HR/PULSE	Ranges	Adult	Neo	Neo
RESP	Algorithm Ranges[2]	Adult	Adult	Neo
Inv. Pressure	Algorithm	Adult	Neo	Neo
CO_2	Airway Resp. Rate Ranges	Adult	Adult	Neo

1. Paced Patient mode is switched off when changing from Adult to Pediatric or Neonatal mode
2. Ranges - Measurement ranges and Alarm Limit ranges

For example:

The ECG parameter uses the neonatal algorithm if either the *Neonatal* or *Pediatric* patient category is chosen.

If you choose the *Adult* patient category, the ECG parameter uses the adult algorithm. The following pages detail how the choice of patient category significantly influences NBP and ECG monitoring; they also list the minor differences effected by patient category choice to the other parameters.

NBP

The patient's tolerance for the cuff pressure (i.e. stress) when an NBP measurement is made is an important factor to consider when choosing patient category. The amount of stress is determined by:

- the cuff pressure.
- the duration of time the cuff pressure is applied.

Since a neonate can usually tolerate less stress than a pediatric patient, and a pediatric patient can tolerate less than an adult, the System algorithm has *category-dependent safety values*. If the cuff pressure exceeds these *values* for more than a given time period, the cuff immediately deflates and a hard INOP Alarm is given. These *values* are adapted to normal physiological values.

Examples

Overpressure

Overpressure occurs if the cuff maintains a pressure above the *safety value* for more than two seconds. The *safety values* are given in the tables below.

Continuous Pressure

Continuous Pressure occurs if, for any reason, a *safety pressure value* is maintained in the cuff for more than a *safety period*. The *safety values* are given in the tables below. These *safety values* affect the measurement range of each category. The Adult category has the greatest range (systolic 30 to 270 mmHg) and the Neonate has the smallest (systolic 30 to 130 mmHg). **Therefore you cannot use Neonate or Pediatric if the expected pressure values are outside the measurement range for that category**. The table below lists the measurement ranges for each patient category.

Table 41 NBP measurement ranges (in mmHg) for differing patient categories

Measurement Range	Patient Category		
	Adult	Pedi	Neo
Systolic	30 to 270	30 to 180	30 to 130
Mean	20 to 255	20 to 160	20 to 120
Diastolic	10 to 245	10 to 150	10 to 100
Venous Puncture	20 to 120	20 to 80	20 to 50
Recommended Cuff Size	A to E	Any Cuff	1 to 4 & A
Default Inflation Pressure	165 mmHg	125 mmHg	100 mmHg

The table below lists the *safety values* for each patient category.

Table 42 NBP safety values for differing patient categories

Safety Values	Patient Category		
	Adult	Pedi	Neo
Continuous Pressure M1008A	15 mmHg	15 mmHg	N/A
Continuous Pressure M1008B	15 mmHg (for 120s)	15 mmHg (for 120s)	5 mmHg (for 60s)
Continuous Pressure M1008B[1]	15 mmHg (for 180s)	15 mmHg (for 180s)	5 mmHg (for 90s)
Time to inflate M1008A from 0 to 60 mm Hg	40s	20s	N/A
Time to inflate M1008B from 0 to 60 mm Hg	40s	20s	20s
Time to inflate M1008B[1] from 0 to 60 mm Hg	N/A	N/A	N/A
Max. inflation time M1008A	60s	40s	N/A
Max. inflation time M1008B	60s	40s	30s
Max. inflation time M1008B[1]	120s	90s	45s
Max. deflation time M1008A	80s	80s	N/A
Max. deflation time M1008B	80s	80s	60s
Max. deflation time M1008B[1]	150s	150s	80s
Max. measurement time M1008A	100s	100s	N/A
Max. measurement time M1008B	100s	100s	60s

Safety Values	Patient Category		
	Adult	Pedi	Neo
Max. measurement time M1008B[1]	175s	175s	90s
Overpressure protection M1008A	300 mmHg	200 mmHg	N/A
Overpressure protection M1008B	300 mmHg	200 mmHg	150 mmHg
Recommended Cuff Size	A to E	Any Cuff	1 to 4 & A
Default Inflation Pressure	165 mmHg	125 mmHg	100 mmHg

1. With venous puncture functionality.

NBP - Recommendations

Philips makes the following recommendations when selecting a patient category for NBP:

1. Choose the category patient with the most appropriate safety values for your patients physiological condition.
2. Reduce stress on the patient by choosing the appropriate cuff size. A cuff that is too large prolongs inflation time.
3. Use a repetition time appropriate to the patient.

ECG

The most important factor in deciding which category to choose for ECG monitoring is the action of the cardiotach (which uses the QRS to count the heart rate). Three factors can potentially cause the cardiotach to calculate an incorrect heart rate:

- Morphology of the ECG.
- Signal being too weak.
- Paced patients.

The following paragraphs describe the three causes and the recommended actions to deal with them.

Morphology of the ECG

The CMS implements two different signal processing paths with the ECG algorithm to allow for changes in the morphology of ECG.

Recommendation

Choose the category according to the QRS morphology, rather than the patient's age. Use the ADULT patient category if the duration of the QRS base is 50 to 70 ms: use Neonate/Pediatric if the duration is less than 50 ms.

Weak ECG Signal

The signal may be weak due to the patient's constitution, the electrode placement or other factors. A 1 mV calibration bar at the left side of the ECG channel enables you to estimate the quality of the signal.

Recommendation

Use the strongest signal on channel 1 and compare the QRS amplitude with the 1 mV bar; the height should be at least half of that size. If not, change the lead or try a different electrode placement.

Paced Patients

With CMS Release D and later releases and all releases of CMS and NCMS pace pulse rejection is available for all patients categories. CMS's with Release C or earlier, pace pulse rejection is not available for the Pediatric or Neonate patient categories.

Recommendations

If pace pulses are counted as HR pulses:

- Derive the cardiac rate from pulse.
- Look for a lead on channel 1, where the pace pulse amplitude is as low as possible.

NOTE	If the pace pulse amplitude is not zero, the cardiotach may count beats even if there is cardiac arrest.

Heart Rate (HR) / Pulse

	Adult (bpm)	Pedi/Neo (bpm)
Cardiotach Range	15 to 300	15 to 350
HR Alarm Limit Range	15 to 250	15 to 300
Pleth/Pressure Pulse Alarm Limit Range	30 to 250	30 to 300

Specific HR Alarm Limit Ranges for French standards:

30 to 250 bpm (Adult)

30 to 300bpm (Pedi/Neo)

Expected range can be estimated by doing a manual pulse count.

Resp

	Adult/Pedi (rpm)	Neo (rpm)
Respirotach Range	0 to 120	0 to 180
Low Alarm Limit Range	0 to 95	0 to 145
High Alarm Limit Range	10 to 100	30 to 150

In general, use “Pediatric” if rates below 50 rpm are expected; use “Neo” if expected rate is above 100.

Respiration Suppression Algorithm

The Respiration Suppression Algorithm is designed to reduce respiration-induced variation in Pulmonary Artery pressure. A description of this algorithm is provided in the Application Note; “An Algorithm for Reduction of Respiration Artifact in Pulmonary Artery Pressure Measurements” (part number 5953-7352).

	Adult/Pedi	Neo
AWRR Low Range	0 to 95 rpm	0 to 145 rpm
AWRR High Range	10 to 100 rpm	30 to 150 rpm
AWRR Alarm Delay[1]	20 s	10 s

1. This setting cannot be changed

B
Sign-Off Sheets

Signoff Sheets and Worksheets

This appendix contains:

- Configuration Sign-off Sheet
- Drug Calculator Configuration Worksheet for configuring drugs for a specific unit.

These forms have been included for your convenience. When the system has been configured and the User Configuration documented, please give a completed copy of the Configuration Sign-off Sheet to:

- The Nurse Manager or Biomed
- Philips Implementation Planning Specialist
- Philips Clinical Application Specialist

If you will be configuring drugs using the Drug Calculator, make photocopies of the worksheet before you start to document your new drug configuration. The Drug Calculator Configuration Worksheet should be filled out by the clinical staff at the hospital. Please use the Configuration Sign-off Sheet to record who was responsible for your Drug Calculator Configuration and give a completed copy of the Worksheet and Sign-off sheet to:

- The Nurse Manager or Biomed
- Philips Implementation Planning Specialist
- Philips Clinical Application Specialist

Philips CMS Patient Monitoring System
Configuration Sign-off Sheet

Date _____

Hospital _____

Address _____

Unit _____

Hospital Contact _____

Customer Signature _____

Title _____ **Date** _____

Philips **Representative Signature** _____

Title _____ **Date** _____

Philips **Clinical Application Specialist** _____

Philips **Service** _____

Philips **Sales** _____

Model Number _____ **Serial Number** _____

Figure 3 Configuration Sign-Off Sheet

Please give a completed copy of this Configuration Sign-off Sheet to:

- The Nurse Manager or Biomed
- Philips Implementation Planning Specialist
- Philips Clinical Application Specialist

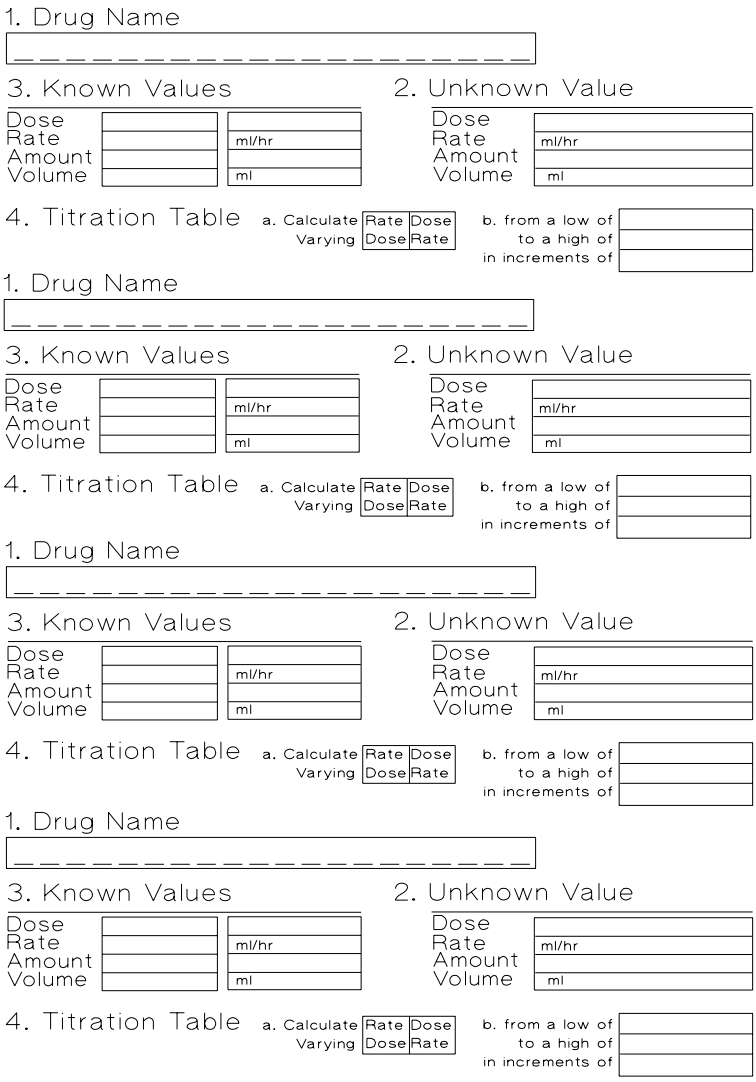


Figure 4 Drug Calculator Configuration Worksheet

C
Printout of Configuration Information

Configuration Printout

The CMS is able to send configuration data in the form of a screen shot to a printer via the RS232 interface. It is also possible to combine more than one screen shot per page. Each printout contains a header with additional device configuration data.

Note Configuration Printout are prints of the information displayed on the screen. To ensure that this is the same information that is stored by the CMS, make sure that the setting are stored (**`Store Settings`** softkey).

Configuration printouts must be directed to the CMS printer port #2. This port must also be configured to **`Computer Off`**.

Note Configuration printouts are independent of the display type. Printouts from a CMS CRT display are made at a resolution of 150 dpi. Printouts from a CMS flat screen display are made at a resolution of 100 dpi. If the printer does not support the appropriate resolution (100 dpi or 150 dpi) page layout anomalies may occur.

The following additional device information is printed as a header with each configuration printout:

- Device type (e.g. CMS)
- Date and Time
- Serial Number
- Software Revision
- Configuration Set
- EEPROM Number
- Language Code
- Application Type (OR/ICU, Adult/Pedi/Neo)

If the configuration settings are sent to a PC, this header information is transmitted before the settings.

How to Print Configuration Data

Note Configuration printouts can only be made while in the configuration Mode

---

To start a configuration printout press: **`Realtime Record`**.

To eject a page from the printer press: **`Delayed Record`**.

To cancel a configuration printout request that is currently in progress press any key excluding **`Realtime Record`** and **`Delayed Record`**.

Note If a configuration printout request is currently in progress, the **`Realtime Record`** and **`Delayed Record`** have no effect.

Configuration printout status is displayed by CMS using one of the following messages:

- Configuration printout in progress
- Configuration printout done
- Configuration printout cancelled

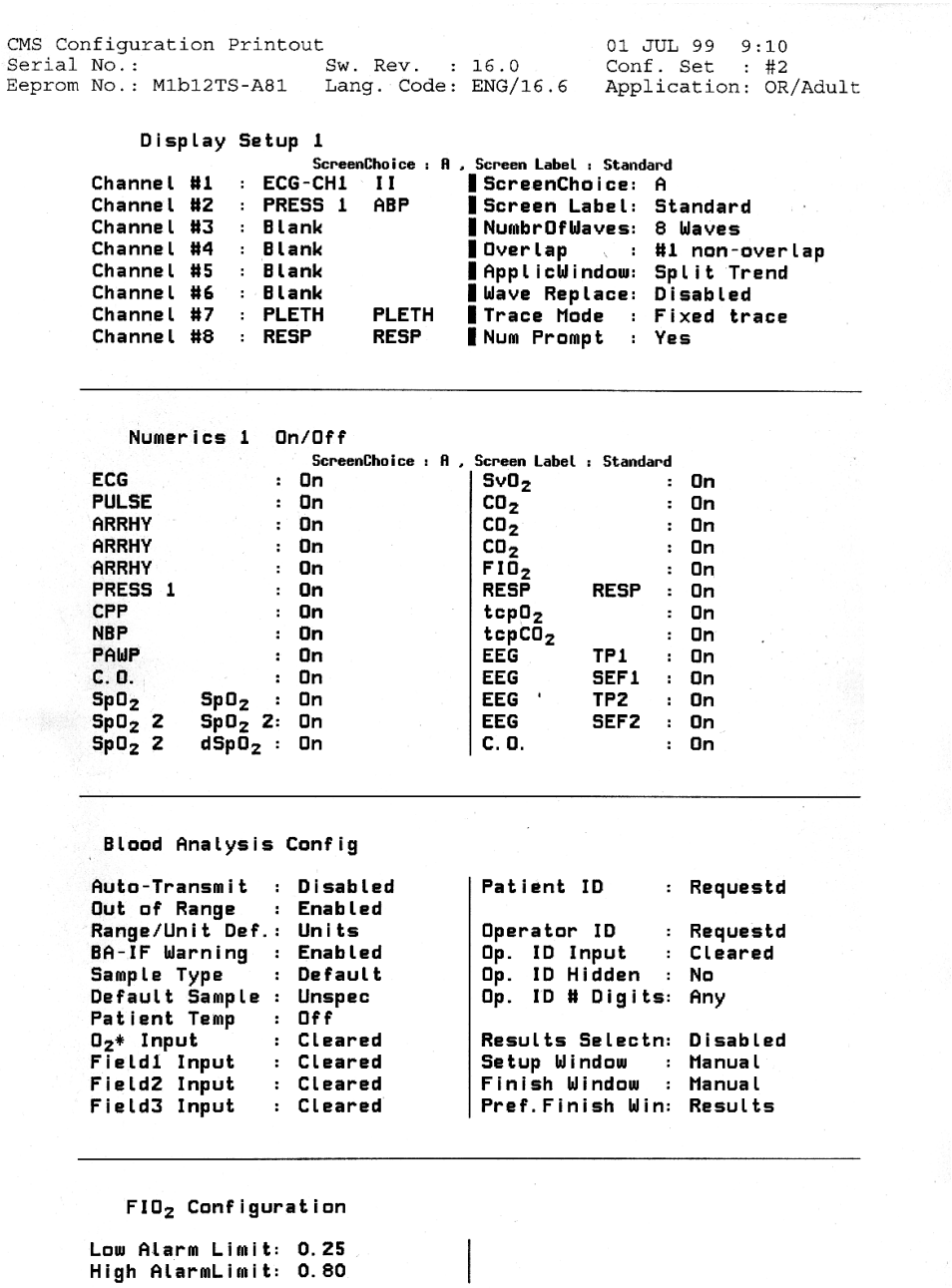
Note **`Configuration printout cancelled`** is displayed if the configuration printout or transmission was cancelled manually.

`Configuration printout cancelled` is also displayed if communication with the device cannot be established.

Printing More than One Configuration Screen on a Page

When a configuration printout is started, the appropriate data is sent to the printer but the page is not ejected from the printer unless the printout is too large for the page or it is manually ejected by pressing the **`Delayed Record`** key.

Provided that the configuration printouts are small enough, normally, more than one will be printed on the page before it is ejected.



CMS Configuration Printout 01 JUL 99 9:10
Serial No.: Sw. Rev. : 16.0 Conf. Set : #2
Eeprom No.: M1b12TS-A81 Lang. Code: ENG/16.6 Application: OR/Adult

Display Setup 1

ScreenChoice : A , Screen Label : Standard

Channel #1	: ECG-CH1	II	ScreenChoice:	A
Channel #2	: PRESS 1	ABP	Screen Label:	Standard
Channel #3	: Blank		NumbrOfWaves:	8 Waves
Channel #4	: Blank		Overlap :	#1 non-overlap
Channel #5	: Blank		ApplicWindow:	Split Trend
Channel #6	: Blank		Wave Replace:	Disabled
Channel #7	: PLETH	PLETH	Trace Mode :	Fixed trace
Channel #8	: RESP	RESP	Num Prompt :	Yes

Numerics 1 On/Off

ScreenChoice : A , Screen Label : Standard

ECG		: On	SvO_2		: On
PULSE		: On	CO_2		: On
ARRHY		: On	CO_2		: On
ARRHY		: On	CO_2		: On
ARRHY		: On	FIO_2		: On
PRESS 1		: On	RESP	RESP	: On
CPP		: On	$tcpO_2$		: On
NBP		: On	$tcpCO_2$		: On
PAWP		: On	EEG	TP1	: On
C.O.		: On	EEG	SEF1	: On
SpO_2	SpO_2	: On	EEG	TP2	: On
SpO_2 2	SpO_2 2	: On	EEG	SEF2	: On
SpO_2 2	$dSpO_2$	: On	C.O.		: On

Blood Analysis Config

Auto-Transmit	: Disabled	Patient ID	: Requestd
Out of Range	: Enabled		
Range/Unit Def.	: Units	Operator ID	: Requestd
BA-IF Warning	: Enabled	Op. ID Input	: Cleared
Sample Type	: Default	Op. ID Hidden	: No
Default Sample	: Unspec	Op. ID # Digits	: Any
Patient Temp	: Off		
O_2* Input	: Cleared	Results Selectn	: Disabled
Field1 Input	: Cleared	Setup Window	: Manual
Field2 Input	: Cleared	Finish Window	: Manual
Field3 Input	: Cleared	Pref.Finish Win	: Results

FIO_2 Configuration

Low Alarm Limit	0.25
High AlarmLimit	0.80

Figure 5 An Example of a Configuration Printout

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